INCH-POUND

MIL-M-38510/61C
15 June 2004
SUPERSEDING
MIL-M-38510/61B
15 July 1985

MILITARY SPECIFICATION
MICROCIRCUITS, DIGITAL, ECL, FLIP-FLOPS,
MONOLITHIC SILICON

Inactive for new design after 6 September 1996.

This specification is approved for use by all Departments
and Agencies of the Department of Defense.

The requirements for acquiring the product herein shall consist of this specification sheet and MIL-PRF 38535

1. SCOPE

1.1 Scope. This specification covers the detail requirements for monolithic silicon, ECL, logic gating microcircuits. Two product assurance classes and a choice of case outlines and lead finishes are provided for each type and are reflected in the complete part number. For this product, the requirements of MIL-M-38510 have been superseded by MIL-PRF-38535, (see 6.3).

1.2 Part or Identifying Number (PIN). The PIN is in accordance with MIL-PRF-38535, and as specified herein.

1.2.1 Device types. The device types are as follows:

Device type	Circuit
01	Dual D-type flip flop with preset and clear
02	Dual D-type flip flop with preset and clear
03	Hex D-type flip flop
04	Dual J-K flip flop with preset and clear

1.2.2 Device class. The device class is the product assurance level as defined in MIL-PRF-38535.

1.2.3 Case outlines. The case outlines are as designated in MIL-STD-1835 and as follows:

Outline letter	Descriptive designator	Terminals	Package style
E	GDIP1-T16 or CDIP2-T16	16	Dual-in-line
F	GDFP2-F16 or CDFP3-F16	16	Flat
2	CQCC1-N20	20	Square chip carrier

Comments, suggestions, or questions on this document should be addressed to: Commander, Defense Supply Center Columbus, ATTN: DSCC-VAS, 3990 East Broad St., Columbus, OH 43218-3990, or emailed to bipolar@dscc.dla.mil. Since contact information can change, you may want to verify the currency of this address information using the ASSIST Online database at www.dodssp.daps.mil.

1.3 Absolute maximum ratings.

Supply voltage range	0 V to -7.0 V
Input voltage range	0 V to V_{EE} (most negative power supply voltage
Storage temperature range	-65° to +150°C
Maximum power dissipation, (P_D) 1/	
Device type 01	165 mW
Device type 02	190 mW
Device type 03	105 mW
Device type 04	200 mW
Lead temperature (soldering, 10 seconds)	+260°C
Junction temperature (T_J) 2/	165°C
Maximum output current	-50 mA
Thermal resistance, junction to case (θ_{JC}):	
Cases E, F and 2	(See MIL-STD-1835)

1.4 Recommended operating conditions.

Supply voltage (V_{EE})	-5.46 V minimum to –4.94 V maximum
Minimum high level input voltage (V_{IH})	-1.105 V at T_C = 25°C
(at 500 linear feet per minute) (ft/min)	-1.000 V at T_C = 125°C
	-1.255 V at T_C = -55°C
Maximum low level input voltage (V_{IL})	-1.475 V at T_C = 25°C
(at 500 linear ft/min)	-1.400 V at T_C = 125°C
	-1.510 V at T_C = -55°C
Normalized fanout (each output)	10 3/
Case operating temperature range (T_C) (at 500 linear ft/min)	-55° to +125°C
Case operating temperature (at still air)	
Device types 01, 02, 04 (cases E and F):	-55° to +125°C
Device type 03:	
(case E)	-55° to +100°C
(case F)	-55° to +110°C
Input data setup time, (t_{SETUP})	
Device type 01	2.5 ns minimum
Device type 02	1.0 ns minimum
Device type 03	2.5 ns minimum
Device type 04	2.5 ns minimum
Input data hold time, (t_{HOLD})	
Device type 01	1.5 ns minimum
Device type 02	0.75 ns minimum
Device type 03	1.5 ns minimum
Device type 04	1.5 ns minimum

1/ Must withstand the added P_D due to short-circuit test (e.g., I_{OS}).
2/ Maximum junction temperature should not be exceeded except in accordance with allowable short duration burn-in screening condition in accordance with MIL-PRF-38535.
3/ Device will fanout in both high and low levels to the specified number of data inputs on the same device type as that being tested.

2. APPLICABLE DOCUMENTS

2.1 General. The documents listed in this section are specified in sections 3, 4, or 5 of this specification. This section does not include documents cited in other sections of this specification or recommended for additional information or as examples. While every effort has been made to ensure the completeness of this list, document users are cautioned that they must meet all specified requirements of documents cited in sections 3, 4, or 5 of this specification, whether or not they are listed.

2.2 Government documents.

2.2.1 Specifications and Standards. The following specifications and standards form a part of this specification to the extent specified herein. Unless otherwise specified, the issues of these documents are those cited in the solicitation or contract.

DEPARTMENT OF DEFENSE SPECIFICATIONS

MIL-PRF-38535 - Integrated Circuits (Microcircuits) Manufacturing, General Specification for.

DEPARTMENT OF DEFENSE STANDARDS

MIL-STD-883 - Test Method Standard for Microelectronics.
MIL-STD-1835 - Interface Standard Electronic Component Case Outlines

(Copies of these documents are available online at http://assist.daps.dla.mil;quicksearch/ or www.dodssp.daps.mil or from the Standardization Document Order Desk, 700 Robbins Avenue, Building 4D, Philadelphia, PA 19111-5094.)

2.3 Order of precedence. In the event of a conflict between the text of this specification and the references cited herein, the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

3. REQUIREMENTS

3.1 Qualification. Microcircuits furnished under this specification shall be products that are manufactured by a manufacturer authorized by the qualifying activity for listing on the applicable qualified manufacturers list before contract award (see 4.3 and 6.4).

3.2 Item requirements. The individual item requirements shall be in accordance with MIL-PRF-38535 and as specified herein or as modified in the device manufacturer's Quality Management (QM) plan. The modification in the QM plan shall not affect the form, fit, or function as described herein.

3.3 Design, construction, and physical dimensions. The design, construction, and physical dimensions shall be as specified in MIL-PRF-38535 and herein.

3.3.1 Terminal connections and logic diagrams. The terminal connections and logic diagrams shall be as specified on figure 1.

3.3.2 Truth tables and logic equations. The truth tables and logic equations shall be as specified on figure 2.

3.3.3 Schematic circuits. The schematic circuits shall be maintained by the manufacturer and made available to the qualifying activity and the preparing activity upon request.

TABLE I. Electrical performance characteristics.

Test	Symbol	Conditions $-55°C \le T_C \le +125°C$ 1/	T_C	V_{IH1}	V_{IL1}	Device types	Limits Min	Limits Max	Unit
High level output voltage	V_{OH}	V_{EE} = -5.2 V, V_{CC} = 0 V, Load = 100Ω to –2V	25°C 125°C -55°C	-0.780 V -0.630 V -0.880 V	-1.850 V -1.820 V -1.920 V	All	-0.930 -0.825 -1.080	-0.780 -0630 -0880	V
Low level output voltage	V_{OL}	V_{EE} = -5.2 V, V_{CC} = 0 V, Load = 100Ω to –2V	T_C 25°C 125°C -55°C	V_{IH1} -0.780 V -0.630 V -0.880 V	V_{IL1} -1.850 V -1.820 V -1.920 V	All	-1.850 -1.820 -1.920	-1.620 -1.545 -1.655	V
High level threshold output voltage	V_{OTH}	V_{EE} = -5.2 V, V_{CC} = 0 V, Load = 100Ω to –2V	T_C 25°C 125°C -55°C	V_{ITH} -1.105 V -1.000 V -1.255 V	V_{ITL} -1.475 V -1.400 V -1.510 V	All	-0.950 -0.845 -1.100	- - - - - - - - -	V
Low level threshold output voltage	V_{OTL}	V_{EE} = -5.2 V, V_{CC} = 0 V, Load = 100Ω to –2V	T_C 25°C 125°C -55°C	V_{ITH} -1.105 V -1.000 V -1.255 V	V_{ITL} -1.475 V -1.400 V -1.510 V	All	- - - - - - - - -	-1.600 -1.525 -1.635	V
Power supply drain current	I_{EE}	V_{EE} = -5.2 V, V_{CC} = 0 V				01 02 03 04	-62 -72 -121 -75		mA
High level input current	I_{IH1}	V_{EE} = -5.2 V, V_{CC} = 0 V, V_{IH1} = -0.780 V at 25°C, -0.630 V at 125°C, -0.880 at -55°C				01, 02, 03 04	- - - - - -	375 450	µA
	I_{IH2}					01 02 03 04	- - - - - - 	565 700 527 665	µA
	I_{IH3}					01 02	 	420 375	µA
	I_{IH4}					01 02	 	450 495	µA
Low level input current	I_{IL}	V_{EE} = -5.2 V, V_{CC} = 0 V, V_{IL1} = -1.850 V at 25°C, -1.820 V at 125°C, -1.920 at -55°C				All	0.3		µA

See footnote at end of table.

TABLE I. Electrical performance characteristics – Continued.

Test	Symbol	Conditions -55°C ≤ T_C ≤ +125°C 1/	Device types	Limits Min	Limits Max	Unit
Maximum clock frequency	F_{MAX}	V_{EEL} = -3.2 V, V_{CC} = +2.0 V CL ≤ 5 pF (output under test) Load = 100Ω to GND	01	105		MHz
			02	200		
			03	115		
			04	105		
Transition time, low to high level	t_{TLH}	V_{EEL} = -3.2 V, V_{CC} = +2.0 V, $\frac{RL}{2}$ = 50Ω, CL ≤ 5 pF (output under test) Load = 100Ω to GND (outputs not under test)	01	1.0	4.9	ns
			02	1.0	3.6	
			03	1.0	4.7	
			04	1.0	5.3	
Transition time, high to low level	t_{THL}		01	1.0	4.9	ns
			02	1.0	3.6	
			03	1.0	4.7	
			04	1.0	5.3	
Propagation delay time, low to high level (clear or preset to output	t_{PLH1}		01	1.1	4.9	ns
			02	1.0	3.9	
			04	1.0	5.9	
Propagation delay time, high to low level (clear or preset to output	t_{PHL1}	V_{EE} = -3.2 V, V_{CC} = +2.0 V, $\frac{RL}{2}$ = 50Ω, CL ≤ 5 pF (output under test) Load = 100Ω to GND (outputs not under test)	01	1.1	4.9	ns
			02	1.0	3.9	
			04	1.0	5.9	
Propagation delay time, low to high level (clock to output	t_{PLH2}		01	1.4	5.0	ns
			02	1.2	3.9	
			03	1.3	5.3	
			04	1.0	5.3	
Propagation delay time, high to low level (clock to output	t_{PHL2}		01	1.4	5.0	ns
			02	1.2	3.9	
			03	1.3	5.3	
			04	1.0	5.3	

1/ Limits are valid provided circuit is in a test socket and transverse air flow of 500 linear ft/min is maintained.

TABLE II. Electrical test requirements.

MIL-PRF-38535 test requirements	Subgroups (see table III)	
	Class S devices	Class B devices
Interim electrical parameters	1	1
Final electrical test parameters	1*, 2, 3, 9	1*, 2, 3, 9
Group A test requirements	1, 2, 3, 9, 10, 11	1, 2, 3, 9, 10, 11
Group B electrical test parameters when using the method 5005 QCI option	1, 2, 3	N/A
Group C end-point electrical parameters	1, 2, 3	1, 2, 3
Group D end-point electrical parameters	1, 2, 3	1, 2, 3

*PDA applies to subgroup 1.

4. VERIFICATION

4.1 Sampling and inspection. Sampling and inspection procedures shall be in accordance with MIL-PRF-38535 or as modified in the device manufacturer's Quality Management (QM) plan. The modification in the QM plan shall not effect the form, fit, or function as described herein.

4.2 Screening. Screening shall be in accordance with MIL-PRF-38535 and shall be conducted on all devices prior to qualification and quality conformance inspection. The following additional criteria shall apply:

a. The burn-in test duration, test condition, and test temperature, or approved alternatives shall be as specified in the device manufacturer's QM plan in accordance with MIL-PRF-38535. The burn-in test circuit shall be maintained under document control by the device manufacturer's Technology Review Board (TRB) in accordance with MIL-PRF-38535 and shall be made available to the acquiring or preparing activity upon request. The test circuit shall specify the inputs, outputs, biases, and power dissipation, as applicable, in accordance with the intent specified in test method 1015 of MIL-STD-883.

b. Interim and final electrical test parameters shall be as specified in table II, except interim electrical parameters test prior to burn-in is optional at the discretion of the manufacturer.

c. Additional screening for space level product shall be as specified in MIL-PRF-38535.

4.3 Qualification inspection. Qualification inspection shall be in accordance with *MIL-PRF-38535*.

4.4 Technology Conformance inspection (TCI). Technology conformance inspection shall be in accordance with MIL-PRF-38535 and herein for groups A, B, C, and D inspections (see 4.4.1 through 4.4.4).

4.4.1 Group A inspection. Group A inspection shall be in accordance with table III of MIL-PRF-3853*5* and as follows:

a. Tests shall be as specified in table II herein.

b. Subgroups 4, 5, 6, 7, and 8 shall be omitted.

4.4.2 Group B inspection. Group B inspection shall be in accordance with table II MIL-PRF-38535.

4.4.3 Group C inspection. Group C inspection shall be in accordance with table IV of MIL-PRF-38535 and as follows:

a. End-point electrical parameters shall be as specified in table II herein.

b. The steady-state life test duration, test condition, and test temperature, or approved alternatives shall be as specified in the device manufacturer's QM plan in accordance with MIL-PRF-38535. The burn-in test circuit shall be maintained under document control by the device manufacturer's Technology Review Board (TRB) in accordance with MIL-PRF-38535 and shall be made available to the acquiring or preparing activity upon request. The test circuit shall specify the inputs, outputs, biases, and power dissipation, as applicable, in accordance with the intent specified in test method 1005 of MIL-STD-883.

4.4.4 Group D inspection. Group D inspection shall be in accordance with table V of MIL-PRF-38535. End-point electrical parameters shall be as specified in table II herein.

4.5 Methods of inspection. Methods of inspection shall be as specified and as follows:

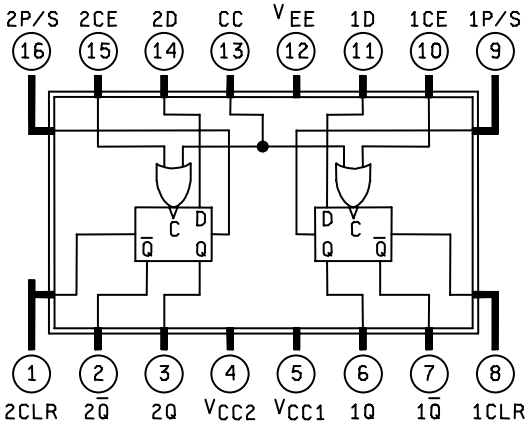
4.5.1 Voltage and current. All voltages given are referenced to the microcircuit ground terminal. Currents given are conventional and positive when flowing into the referenced terminal.

TABLE IIIA. Test conditions for all devices, group A inspection

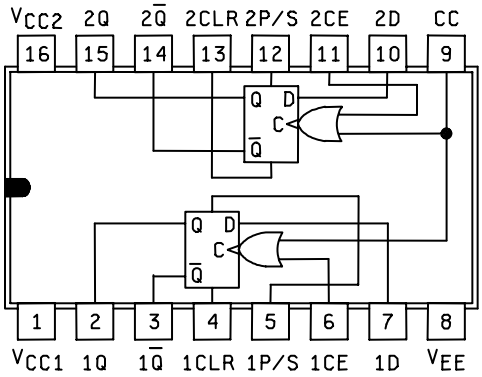
Symbol	V_{IH1} (V)	V_{IL1} (V)	V_{IH2} (V)	V_{IL2} (V)	V_{ITL} (V)	V_{ITH} (V)	A	B	C t ≥ 1µs	D t ≥ 1µs	E t ≥ 1µs
T_C = 25°C	-.780	-1.850	+1.11	+0.31	-1.475	-1.105	100Ω to -2.0 V	100Ω to GND	V_{IH} V_{IL}	V_{IH} V_{ITH}	V_{IH} V_{ITL}
T_C = 125°C	-.630	-1.82	+1.24	+0.36	-1.40	-1.0	100Ω to -2.0 V	100Ω to GND	V_{IH} V_{IL}	V_{IH} V_{ITH}	V_{IH} V_{ITL}
T_C = -55°C	-.880	-1.92	+1.01	+0.28	-1.51	-1.255	100Ω to -2.0 V	100Ω to GND	V_{IH} V_{IL}	V_{IH} V_{ITH}	V_{IH} V_{ITL}

DEVICE TYPES 01 AND 02

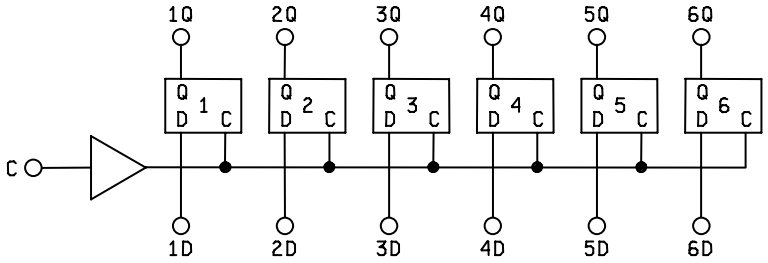
CASE F



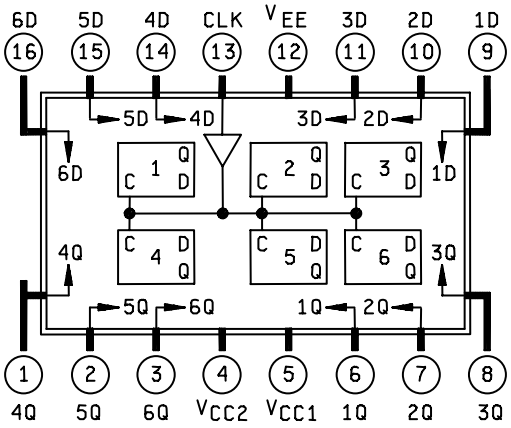
CASE E



DEVICE TYPE 03



CASE F



CASE E

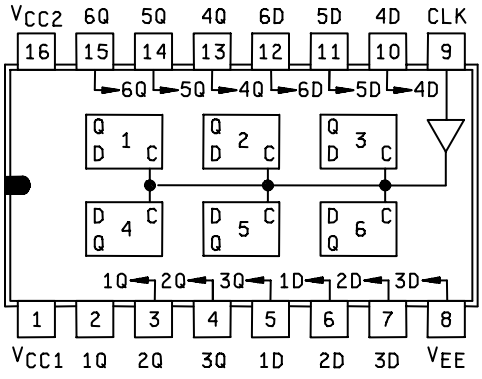
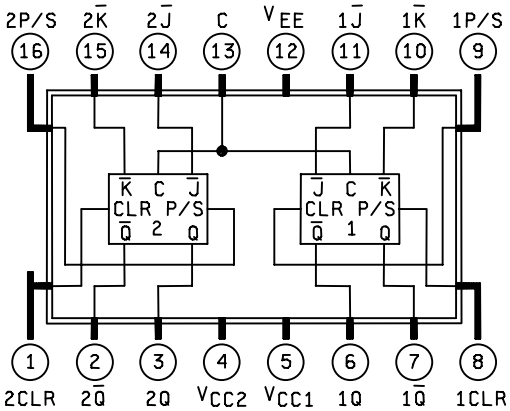


FIGURE 1. Terminal connections and logic diagrams.

DEVICE TYPE 04

CASE F



CASE E

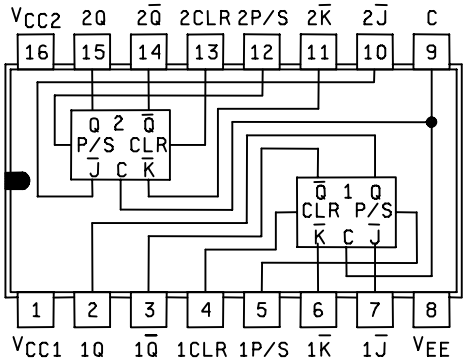
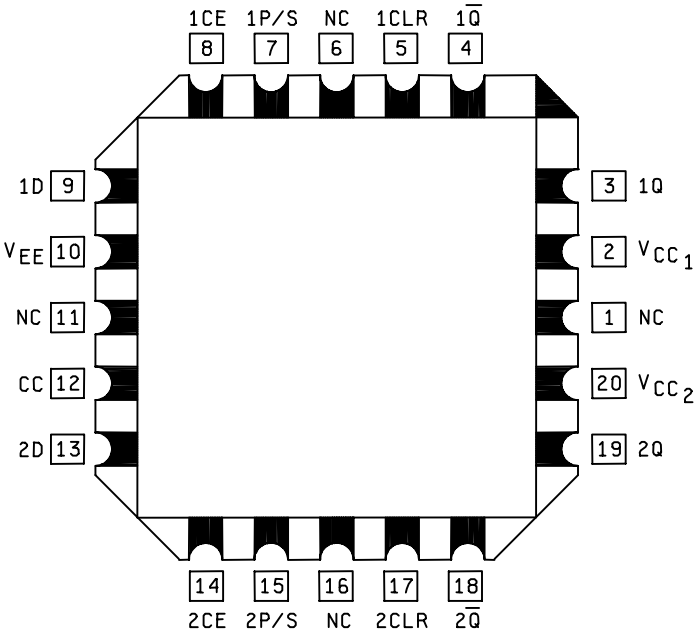


FIGURE 1. Terminal connections and logic diagrams - Continued.

DEVICE TYPE 01
CASE 2



DEVICE TYPE 02
CASE 2

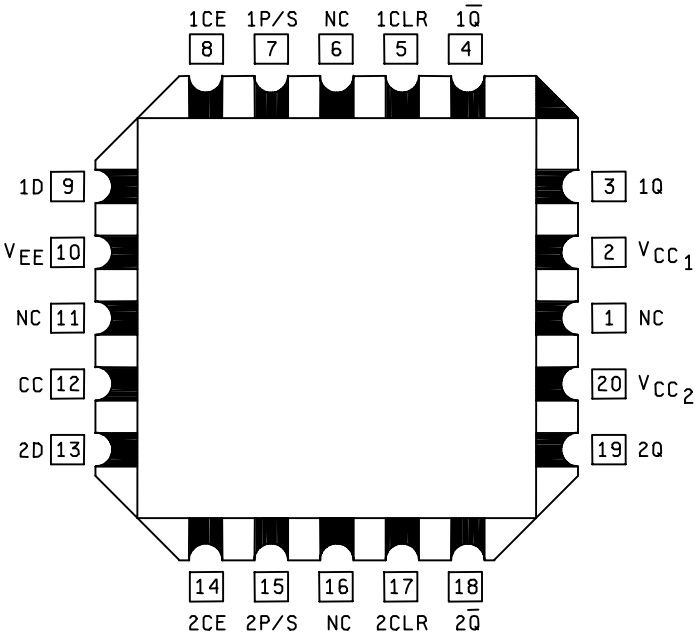
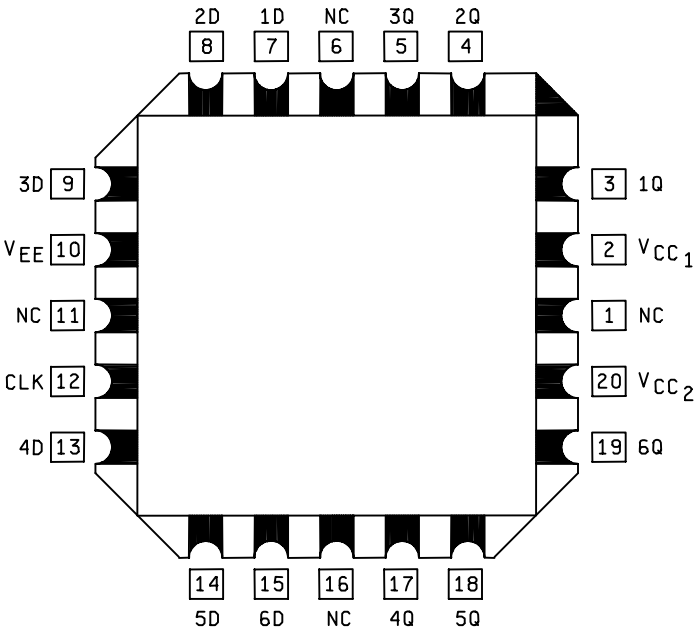


FIGURE 1. Terminal connections and logic diagrams - Continued.

DEVICE TYPE 03
CASE 2



DEVICE TYPE 04
CASE 2

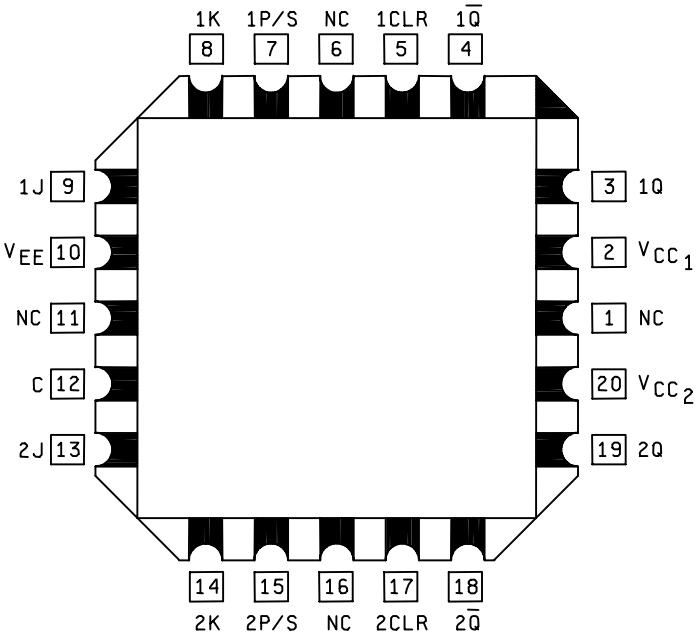


FIGURE 1. Terminal connections and logic diagrams - Continued.

Device types 01 and 02

ASYNCHRONOUS

CLR	P/S	Q	$\overline{Q}$
L	L	Q	$\overline{Q}$
L	H	H	L
H	L	L	H
H	H	H*	H*

SYNCHRONOUS

C	D	Q_{n+1}
L	X	Q_n
H*	L	L
H*	H	H

* This is an unstable condition, when clear (CLR) and preset (P/S) inputs return to their low level (inactive state) these states will not be maintained.

X = Don't care

$C = \overline{C}_E + C_C$

*A clock H is a clock transition transition from a low to a high state.

Preset (P/S) and clear (CLR) override clock (CC) and clock enable (CE) inputs. Each flip-flop may be clocked separately by holding the common clock in the low state and using the enable inputs for the clocking function. If the common clock is to be used to clock the flip-flop, the clock enable inputs must be in the low state. In this case, the enable inputs perform the function of controlling the common clock. The outputs states of the flip-flop change on the positive transition of the clock.

Device type 03

SYNCHRONOUS

C	D	Q_{n+1}
L	X	Q_n
H*	L	L
H*	H	H

X = Don't care

*A clock H is a clock transition transition from a low to a high state.

Clocking is common to all six flip-flops. Data transfer is accomplished on positive going transition of the clock.

Device type 04

ASYNCHRONOUS

CLR	P/S	Q	$\overline{Q}$
L	L	Q	$\overline{Q}$
L	H	H	L
H	L	L	H
H	H	H*	H*

SYNCHRONOUS

$\overline{J}$	$\overline{K}$	Q_{n+1}
L	L	$\overline{Q}_n$
H	L	L
L	H	H
H	H	Q_n

* This is an unstable condition, when clear (CLR) and preset (P/S) inputs return to their low level (inactive state) these states will not be maintained.

Output states change on positive transition of clock for $\overline{J}$-$\overline{K}$ input conditions present.

Preset (P/S) and clear (CLR) override the clock. The output states of the flip-flop change on the positive transition of the clock.

FIGURE 2. Truth tables.

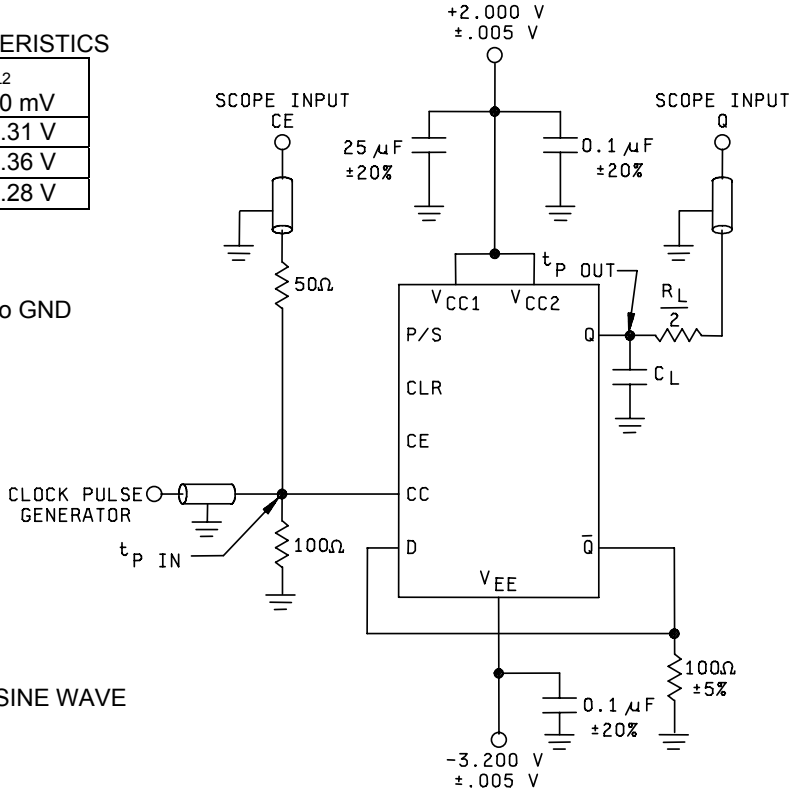
GENERATOR CHARACTERISTICS

T_C	V_{IH2} ±10 mV	V_{IL2} ±10 mV
25°C	+1.11 V	+0.31 V
125°C	+1.24 V	+0.36 V
-55°C	+1.01 V	+0.28 V

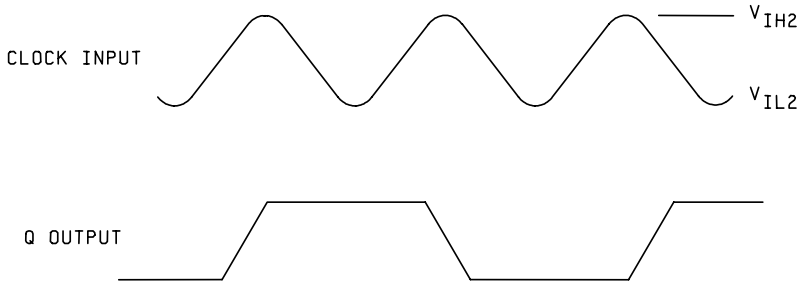
$\frac{R_L}{2}$ = 50Ω ±5%

SCOPE INPUT = 50Ω to GND

C_L (test jig) ≤ 5 pF



CLOCK INPUT= SINE WAVE



$$\text{FREQUENCY (OUT)} = \frac{\text{FREQUENCY (IN)}}{2}$$

FMAX IS HIGHEST INPUT FREQUENCY AT WHICH DEVICE CEASES TO TOGGLE

NOTES:

1. Perform test in accordance with test table; each output is tested separately.
2. All input and output cables are equal lengths of 50 ohm coaxial cables. Wire length should be ≤ .250 (6.35 mm) from t_p in to input pin and t_p out to output pin.
3. Outputs not under test connected to a 100 ohm resistor to ground.
4. Note that observed pulse amplitude is attenuated by one half.

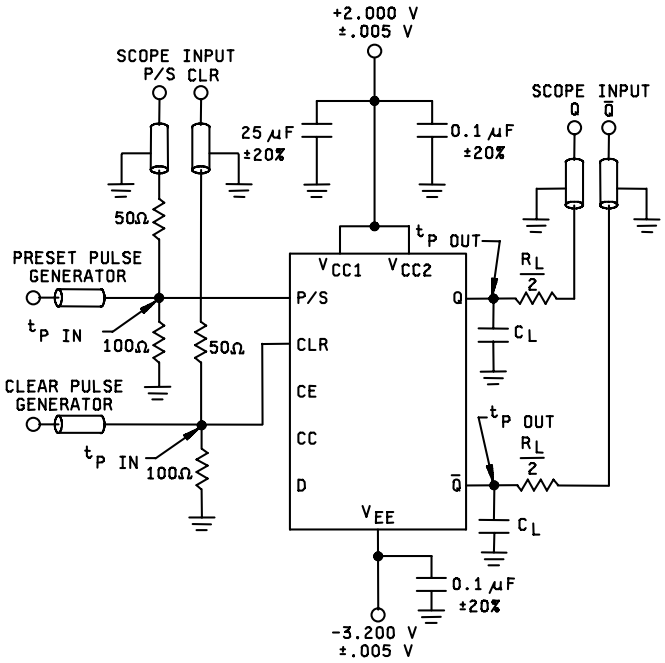
FIGURE 3. F_{MAX} test circuit for device types 01 and 02.

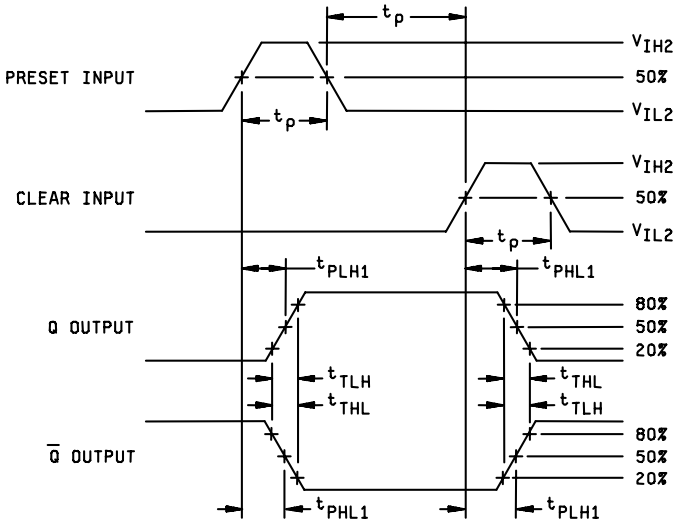
GENERATOR CHARACTERISTICS

T_C	V_{IH2} ±10 mV	V_{IL2} ±10 mV
25°C	+1.11 V	+0.31 V
125°C	+1.24 V	+0.36 V
-55°C	+1.01 V	+0.28 V

z_{OUT} = 50Ω
t_P (P/S & CLR) = 40 ns
PRR = 1 MHz
Device type 01
t_{THL} = 2.0 ns (20%-80%)
t_{TLH} = 2.0 ns (20%-80%)
Device type 02
t_{THL} = 1.5 ns (20%-80%)
t_{TLH} = 1.5 ns (20%-80%)

$\frac{R_L}{2}$ = 50Ω ±5%
SCOPE INPUT = 50Ω to GND
C_L (test jig) ≤ 5 pF





NOTES:
1. Perform test in accordance with test table; each output is tested separately.
2. All input and output cables are equal lengths of 50 ohm coaxial cables. Wire length should be ≤ .250 (6.35 mm) from t_p in to input pin and t_p out to output pin.
3. Outputs not under test connected to a 100 ohm resistor to ground.
4. Note that observed pulse amplitude is attenuated by one half.

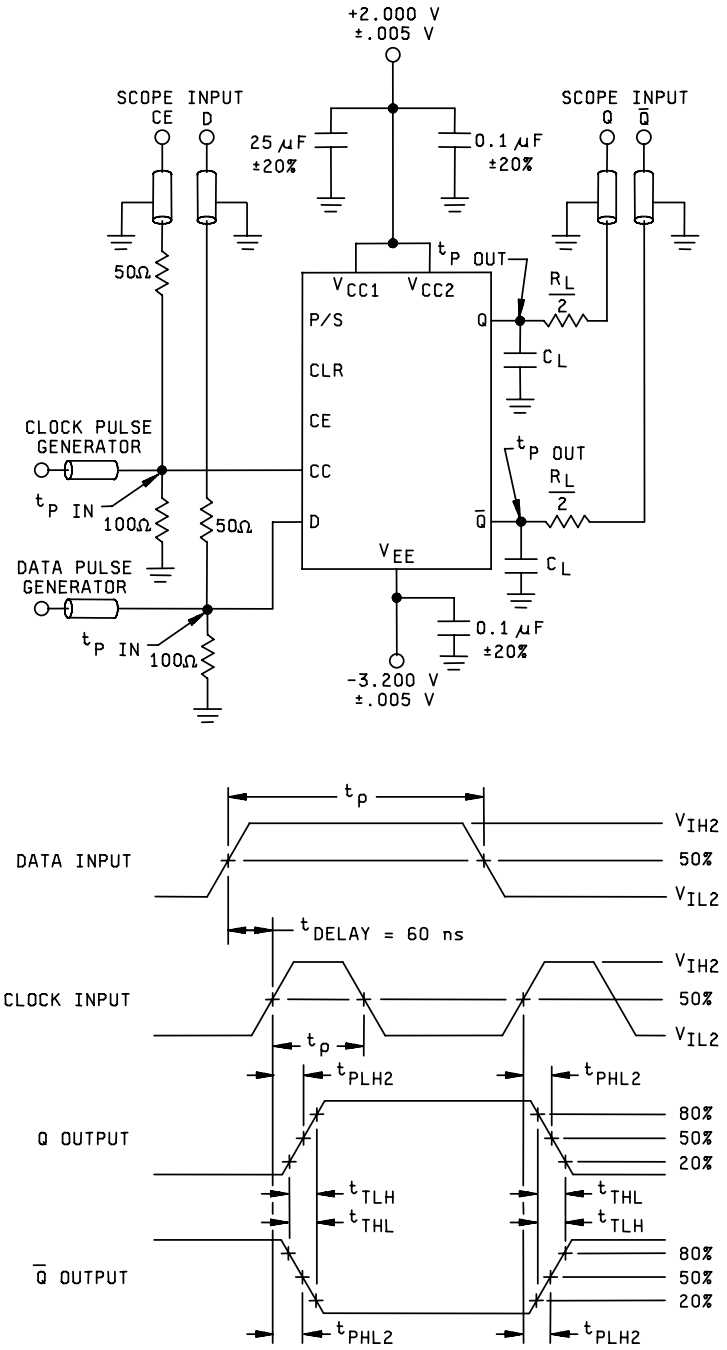
FIGURE 4. Preset and clear switching test circuit for device types 01 and 02.

GENERATOR CHARACTERISTICS

T_C	V_{IH2} ±10 mV	V_{IL2} ±10 mV
25°C	+1.11 V	+0.31 V
125°C	+1.24 V	+0.36 V
-55°C	+1.01 V	+0.28 V

z_{OUT} = 50Ω
t_P (data) = 150 ns
t_P (clocka) = 40 ns
PRR = 1 MHz
Device type 01
t_{THL} = 2.0 ns (20%-80%)
t_{TLH} = 2.0 ns (20%-80%)
Device type 02
t_{THL} = 1.5 ns (20%-80%)
t_{TLH} = 1.5 ns (20%-80%)

$\frac{R_L}{2}$ = 50Ω ±5%
SCOPE INPUT = 50Ω to GND
C_L (test jig) ≤ 5 pF



NOTES:
1. Perform test in accordance with test table; each output is tested separately.
2. All input and output cables are equal lengths of 50 ohm coaxial cables. Wire length should be ≤ .250 (6.35 mm) from t_p in to input pin and t_p out to output pin.
3. Outputs not under test connected to a 100 ohm resistor to ground.
4. Note that observed pulse amplitude is attenuated by one half.

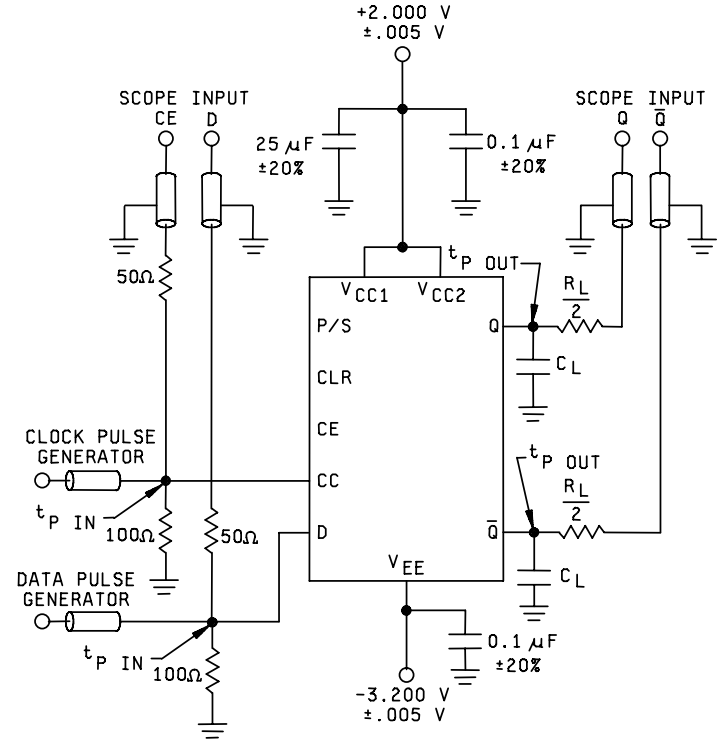
FIGURE 5. Synchronous switching test circuit for device types 01 and 02.

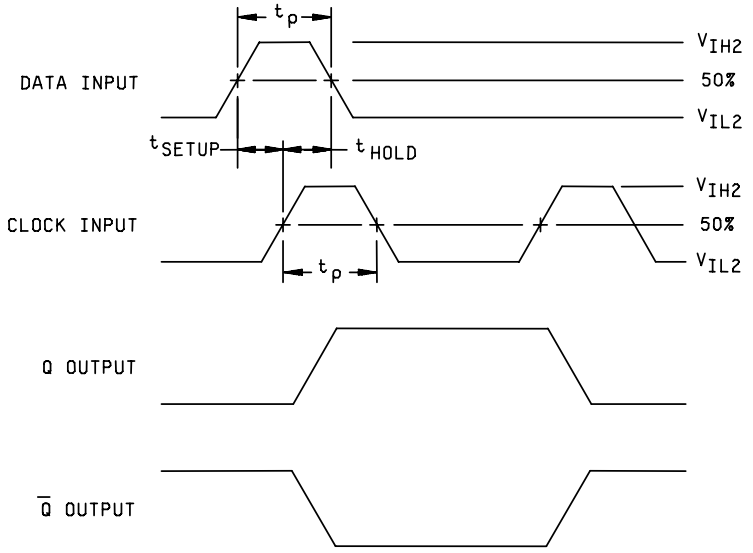
GENERATOR CHARACTERISTICS

T_C	V_{IH2} ±10 mV	V_{IL2} ±10 mV
25°C	+1.11 V	+0.31 V
125°C	+1.24 V	+0.36 V
-55°C	+1.01 V	+0.28 V

z_{OUT} = 50Ω
t_P (data) = 40 ns
t_P (clock) = 40 ns
PRR = 1 MHz
Device type 01
t_{THL} = 2.0 ns (20%-80%)
t_{TLH} = 2.0 ns (20%-80%)
Device type 02
t_{THL} = 1.5 ns (20%-80%)
t_{TLH} = 1.5 ns (20%-80%)

$\frac{R_L}{2}$ = 50Ω ±5%
SCOPE INPUT = 50Ω to GND
C_L (test jig) ≤ 5 pF





NOTES:
1. Perform test in accordance with test table; each output is tested separately.
2. All input and output cables are equal lengths of 50 ohm coaxial cables. Wire length should be ≤ .250 (6.35 mm) from t_p in to input pin and t_p out to output pin.
3. Outputs not under test connected to a 100 ohm resistor to ground.
4. Note that observed pulse amplitude is attenuated by one half.

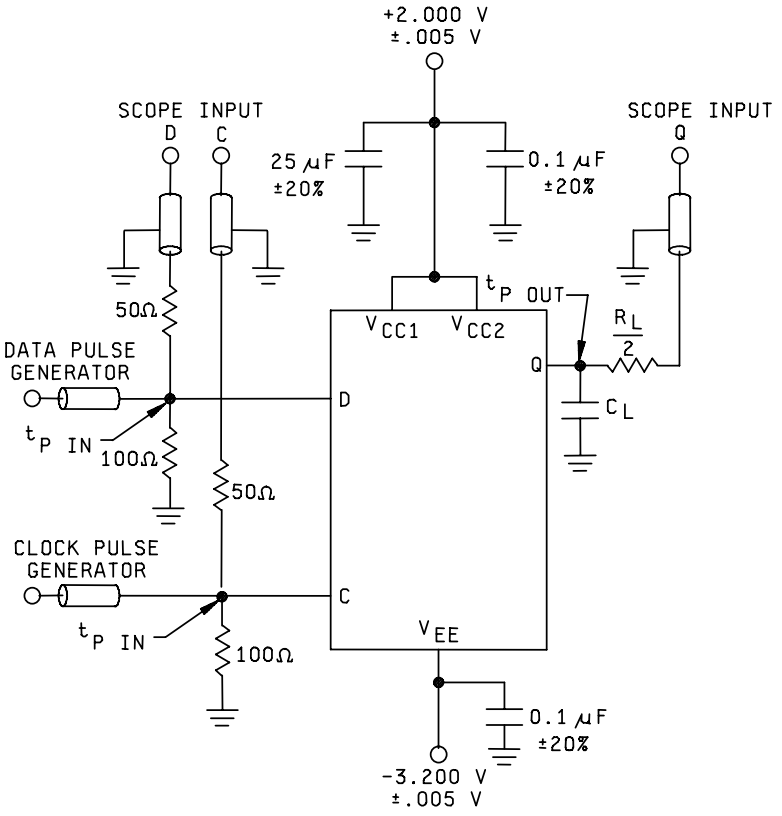
FIGURE 6. Setup and hold test circuit for device types 01 and 02.

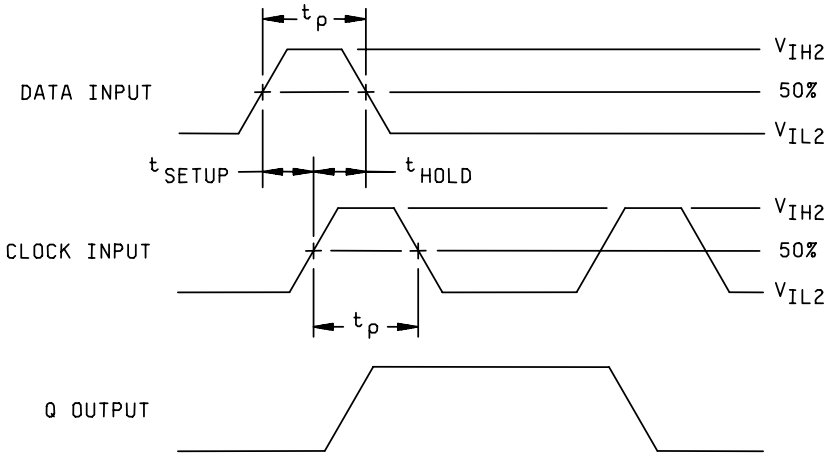
GENERATOR CHARACTERISTICS

T_C	V_{IH2} ±10 mV	V_{IL2} ±10 mV
25°C	+1.11 V	+0.31 V
125°C	+1.24 V	+0.36 V
-55°C	+1.01 V	+0.28 V

z_{OUT} = 50Ω
t_{THL} = 2.0 ns (20%-80%)
t_{TLH} = 2.0 ns (20%-80%)
t_P (data) = 40 ns
t_P (clock) = 40 ns
PRR = 1 MHz

$\frac{R_L}{2}$ = 50Ω ±5%
SCOPE INPUT = 50Ω to GND
C_L (test jig) ≤ 5 pF





NOTES:
1. Perform test in accordance with test table; each output is tested separately.
2. All input and output cables are equal lengths of 50 ohm coaxial cables. Wire length should be ≤ .250 (6.35 mm) from t_p in to input pin and t_p out to output pin.
3. Outputs not under test connected to a 100 ohm resistor to ground.
4. Note that observed pulse amplitude is attenuated by one half.

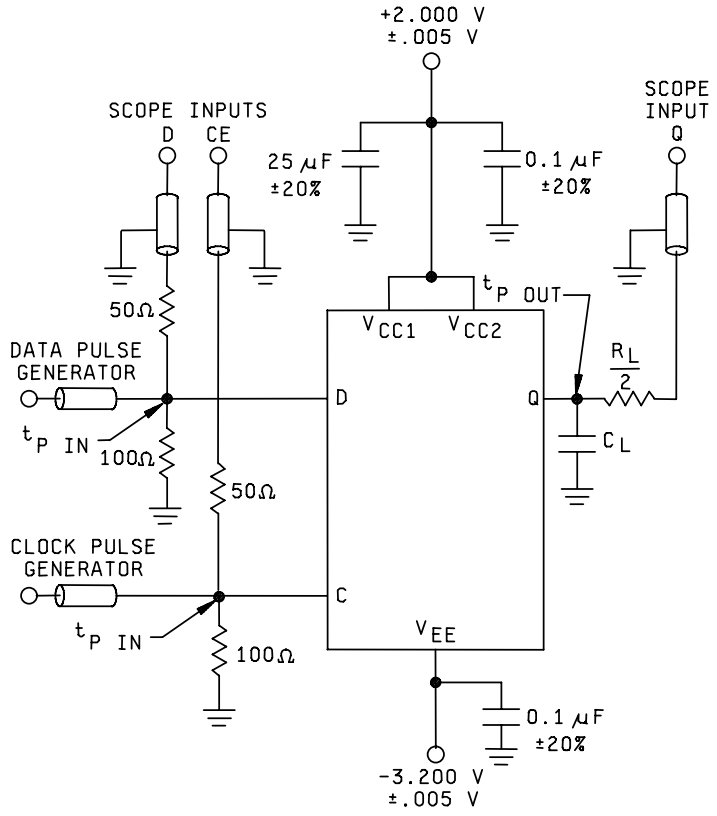
FIGURE 7. Setup and hold test circuit for device type 03.

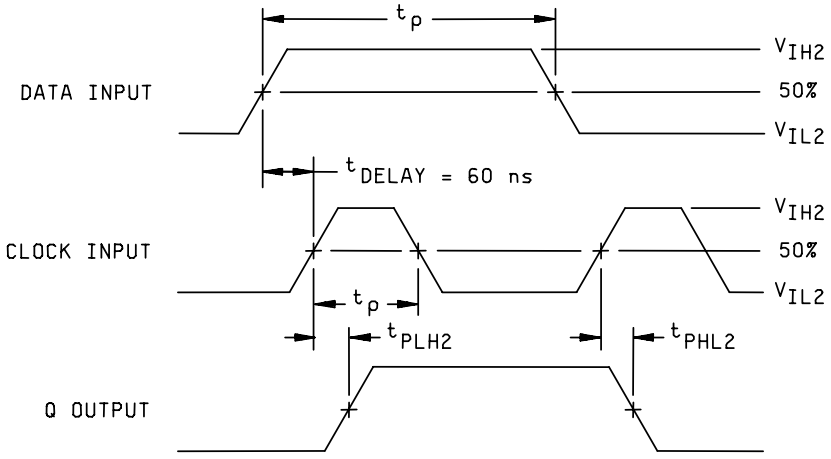
GENERATOR CHARACTERISTICS

T_C	V_{IH2} ±10 mV	V_{IL2} ±10 mV
25°C	+1.11 V	+0.31 V
125°C	+1.24 V	+0.36 V
-55°C	+1.01 V	+0.28 V

z_{OUT} = 50Ω
t_{THL} = 2.0 ns (20%-80%)
t_{TLH} = 2.0 ns (20%-80%)
t_P (data) = 150 ns
t_P (clock) = 40 ns
PRR = 1 MHz

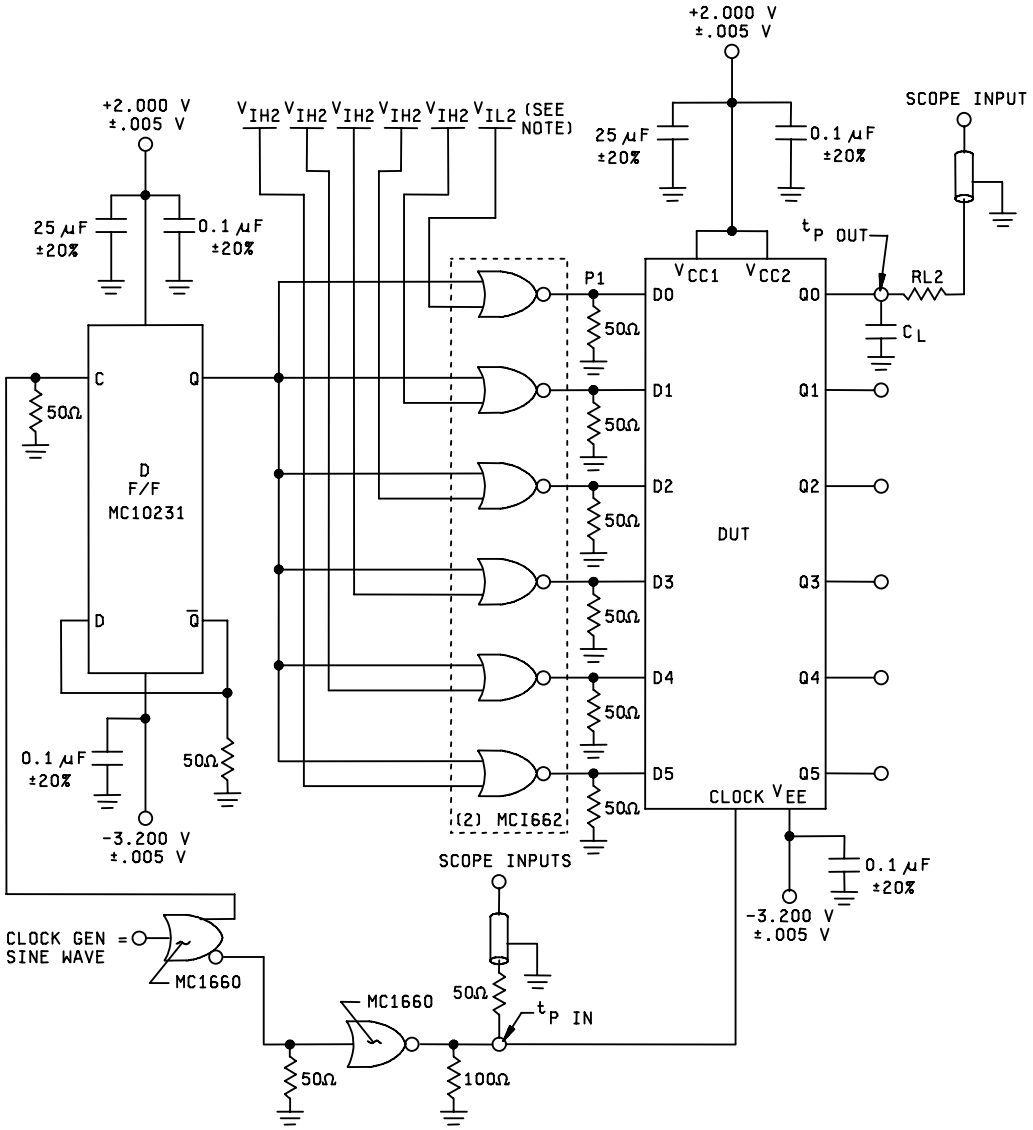
$\frac{R_L}{2}$ = 50Ω ±5%
SCOPE INPUT = 50Ω to GND
C_L (test jig) ≤ 5 pF





NOTES:
1. Perform test in accordance with test table; each output is tested separately.
2. All input and output cables are equal lengths of 50 ohm coaxial cables. Wire length should be ≤ .250 (6.35 mm) from t_p in to input pin and t_p out to output pin.
3. Outputs not under test connected to a 100 ohm resistor to ground.
4. Note that observed pulse amplitude is attenuated by one half.

FIGURE 8. Synchronous switching test circuit for device type 03.



GENERATOR CHARACTERISTICS

T_C	V_{IH2} ±10 mV	V_{IL2} ±10 mV
25°C	+1.11 V	+0.31 V
125°C	+1.24 V	+0.36 V
-55°C	+1.01 V	+0.28 V

All resistors ±5%

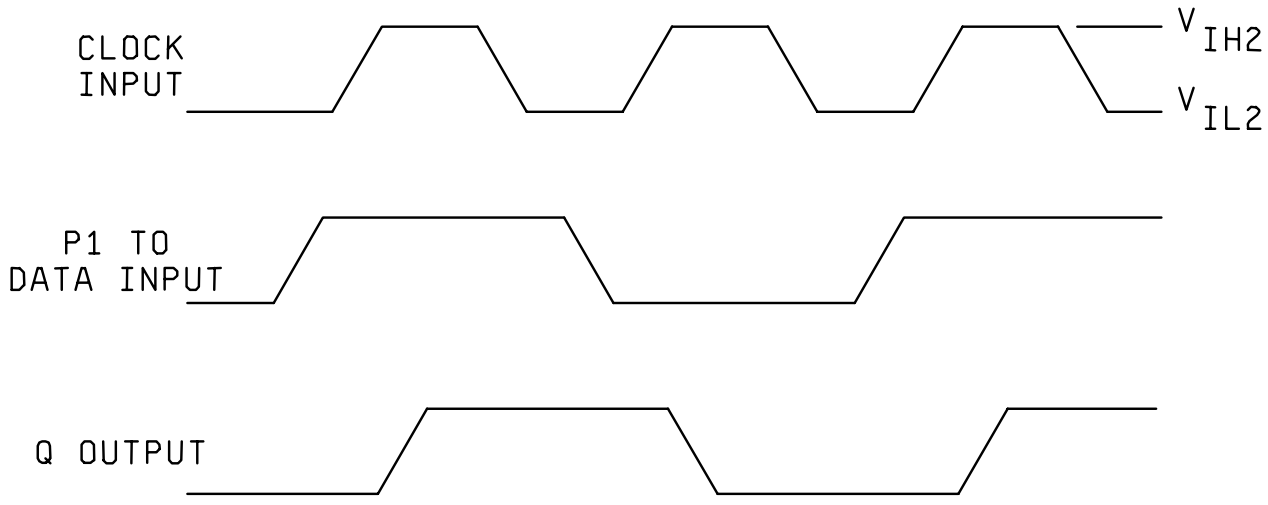
$\frac{R_L}{2}$ = 50Ω ±5%

SCOPE INPUT = 50Ω to GND

C_L (test jig) ≤ 5 pF

NOTE: The flip-flop under test will have a "V_{IL2}" applied to the NOR gate and the remaining Nor gates will have a "V_{IH2}" applied.

FIGURE 9. F_{MAX} test circuit for device type 03.



$$\text{FREQ. (OUT)} = \frac{\text{FREQ (IN)}}{2}$$

FMAX IS HIGHEST INPUT FREQUENCY AT WHICH DEVICE CEASES TO TOGGLE

GENERATOR CHARACTERISTICS

T_C	V_{IH2} ±10 mV	V_{IL2} ±10 mV
25°C	+1.11 V	+0.31 V
125°C	+1.24 V	+0.36 V
-55°C	+1.01 V	+0.28 V

z_{OUT} = 50Ω
t_{THL} = 2.0 ns (20%-80%)
t_{TLH} = 2.0 ns (20%-80%)
t_P (data) = 200 ns
t_P (clock) = 40 ns

NOTES:
1. Perform test in accordance with test table; each output is tested separately.
2. All input and output cables are equal lengths of 50 ohm coaxial cables. Wire length should be ≤ .250 (6.35 mm) from t_p in to input pin and t_p out to output pin.
3. Outputs not under test connected to a 100 ohm resistor to ground.
4. Note that observed pulse amplitude is attenuated by one half.
5. Power supply configuration on MC1660 and MC1662's identical to D.U.T.

FIGURE 9. F_{MAX} test circuit for device type 03 - Continued.

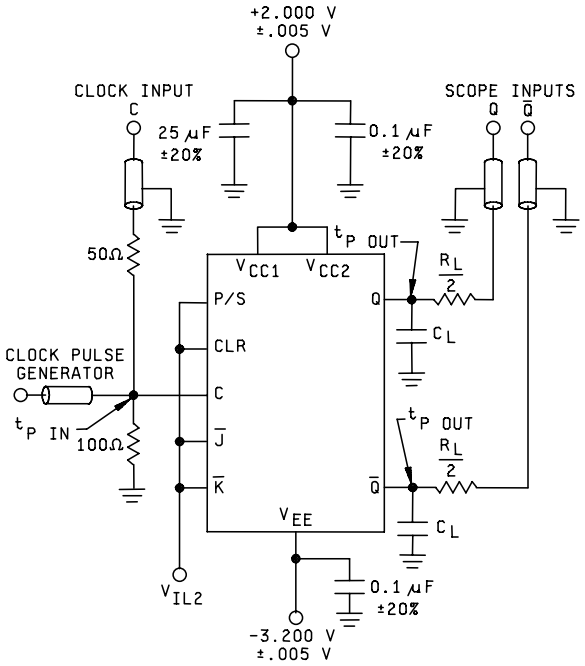
GENERATOR CHARACTERISTICS

T_C	V_{IH2} ±10 mV	V_{IL2} ±10 mV
25°C	+1.11 V	+0.31 V
125°C	+1.24 V	+0.36 V
-55°C	+1.01 V	+0.28 V

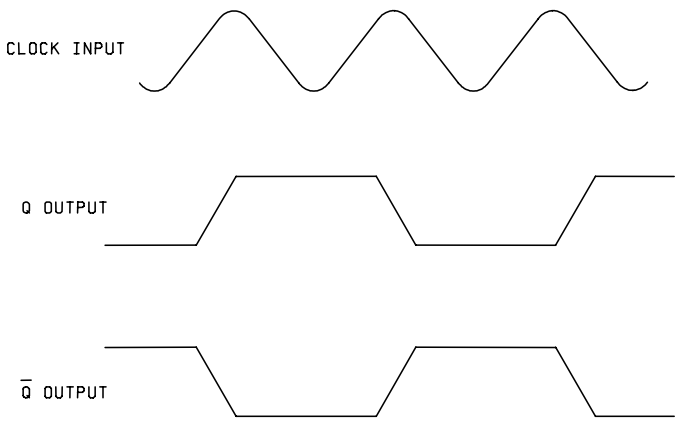
$\frac{R_L}{2} = 50\Omega \pm 5\%$

SCOPE INPUT = 50Ω to GND

C_L (test jig) ≤ 5 pF



CLOCK INPUT = SINE WAVE



$$\text{FREQ. (OUT)} = \frac{\text{FREQ (IN)}}{2}$$

FMAX IS HIGHEST INPUT FREQUENCY AT WHICH DEVICE CEASES TO TOGGLE

NOTES:
1. Perform test in accordance with test table; each output is tested separately.
2. All input and output cables are equal lengths of 50 ohm coaxial cables. Wire length should be ≤ .250 (6.35 mm) from t_p in to input pin and t_p out to output pin.
3. Outputs not under test connected to a 100 ohm resistor to ground.
4. Note that observed pulse amplitude is attenuated by one half.

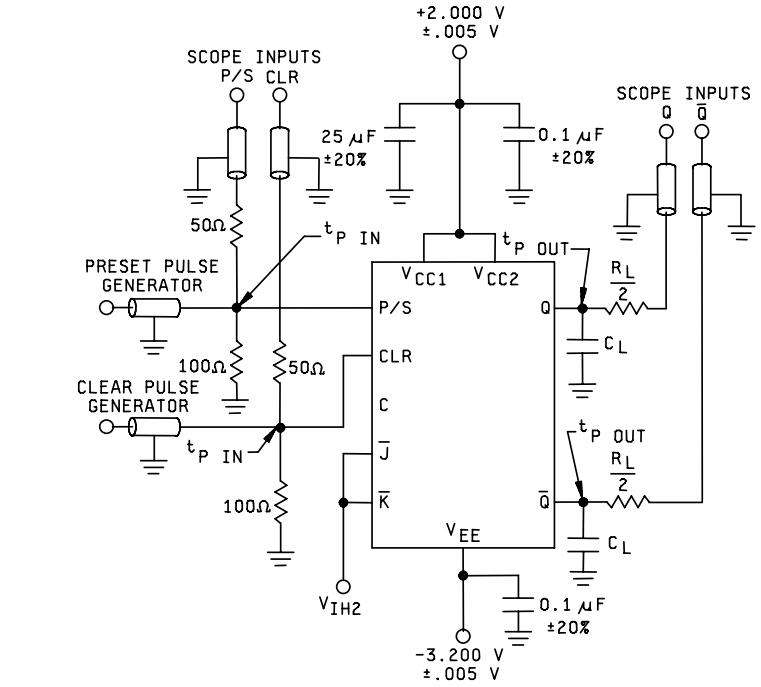
FIGURE 10. F_{MAX} test circuit for device type 04.

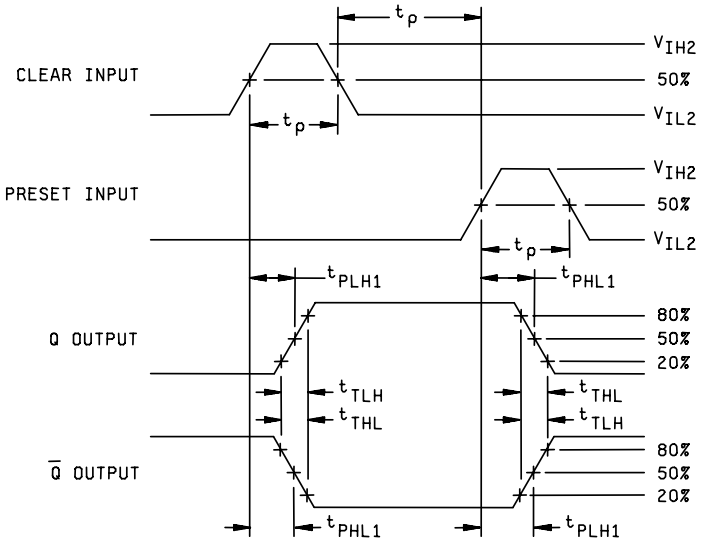
GENERATOR CHARACTERISTICS

T_C	V_{IH2} ±10 mV	V_{IL2} ±10 mV
25°C	+1.11 V	+0.31 V
125°C	+1.24 V	+0.36 V
-55°C	+1.01 V	+0.28 V

z_{OUT} = 50Ω
t_{THL} = 2.0 ns (20%-80%)
t_{TLH} = 2.0 ns (20%-80%)
t_P (P/S & CLR) = 40 ns
PRR = 1 MHz

$\frac{R_L}{2}$ = 50Ω ±5%
SCOPE INPUT = 50Ω to GND
C_L (test jig) ≤ 5 pF





NOTES:
1. Perform test in accordance with test table; each output is tested separately.
2. All input and output cables are equal lengths of 50 ohm coaxial cables. Wire length should be ≤ .250 (6.35 mm) from t_p in to input pin and t_p out to output pin.
3. Outputs not under test connected to a 100 ohm resistor to ground.
4. Note that observed pulse amplitude is attenuated by one half.

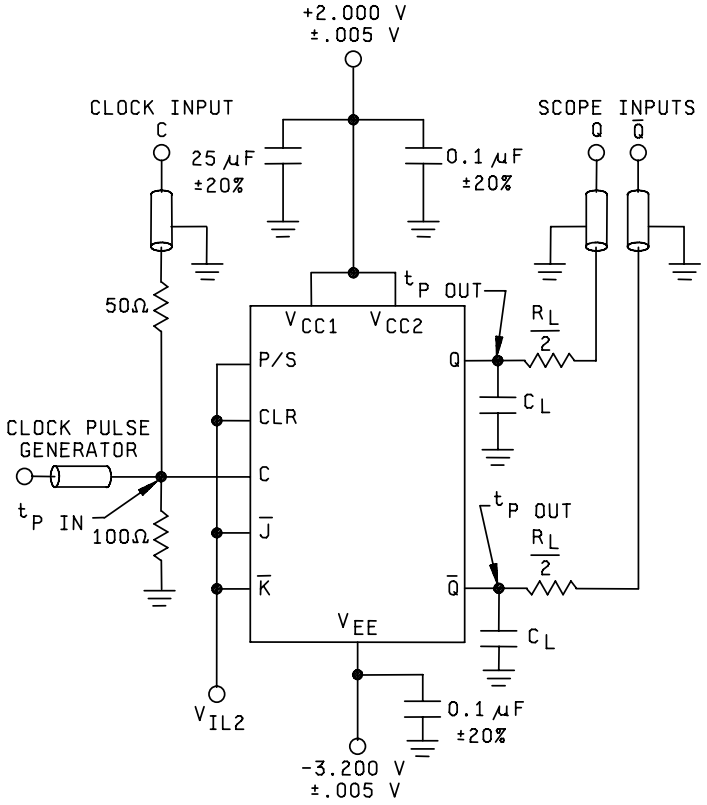
FIGURE 11. Preset and clear switching test circuit for device type 04.

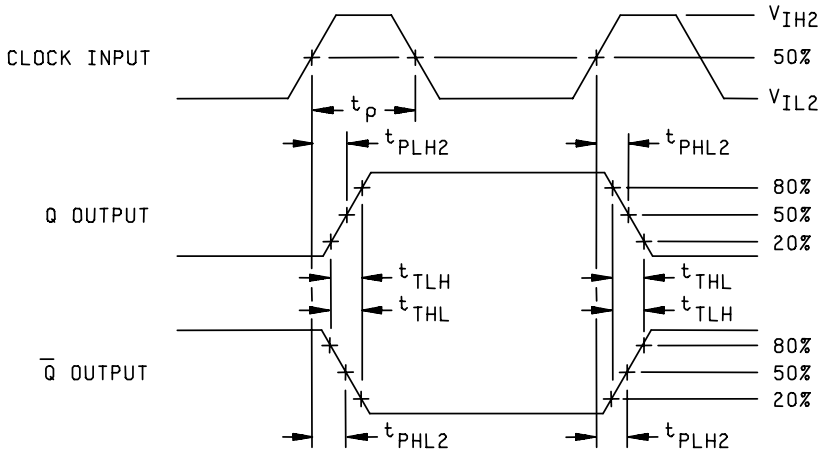
GENERATOR CHARACTERISTICS

T_C	V_{IH2} ±10 mV	V_{IL2} ±10 mV
25°C	+1.11 V	+0.31 V
125°C	+1.24 V	+0.36 V
-55°C	+1.01 V	+0.28 V

z_{OUT} = 50Ω
t_{THL} = 2.0 ns (20%-80%)
t_{TLH} = 2.0 ns (20%-80%)
t_P (clock) = 40 ns
PRR = 1 MHz

$\frac{R_L}{2}$ = 50Ω ±5%
SCOPE INPUT = 50Ω to GND
C_L (test jig) ≤ 5 pF





NOTES:
1. Perform test in accordance with test table; each output is tested separately.
2. All input and output cables are equal lengths of 50 ohm coaxial cables. Wire length should be ≤ .250 (6.35 mm) from t_p in to input pin and t_p out to output pin.
3. Outputs not under test connected to a 100 ohm resistor to ground.
4. Note that observed pulse amplitude is attenuated by one half.

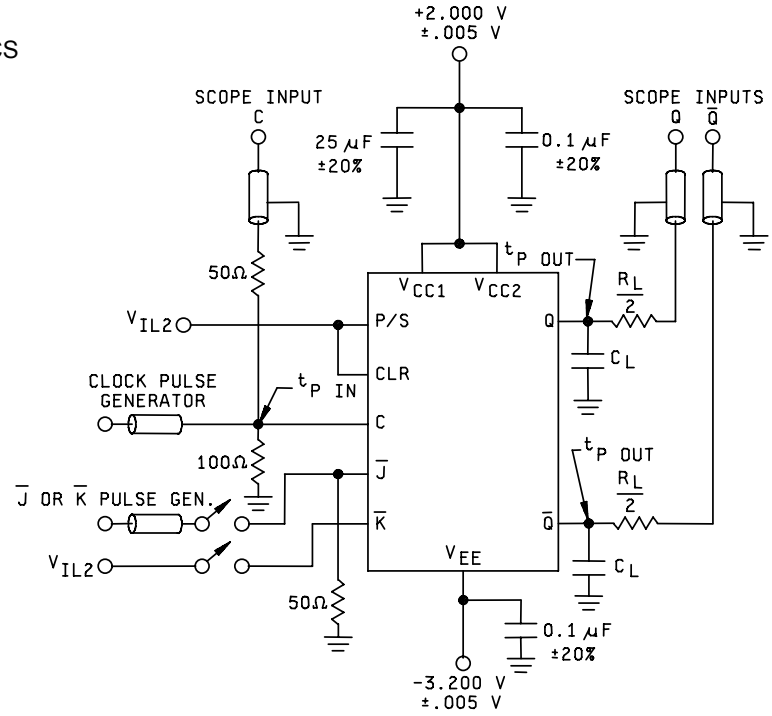
FIGURE 12. Synchronous test circuit for device type 04.

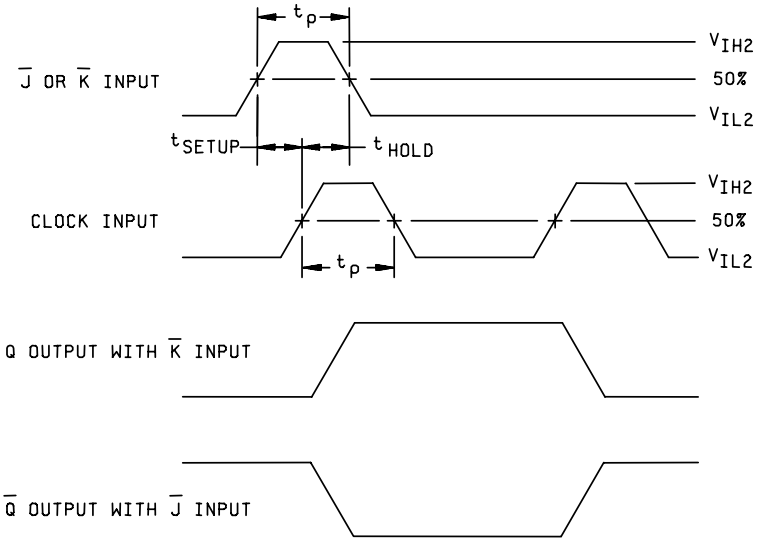
GENERATOR CHARACTERISTICS

T_C	V_{IH2} ±10 mV	V_{IL2} ±10 mV
25°C	+1.11 V	+0.31 V
125°C	+1.24 V	+0.36 V
-55°C	+1.01 V	+0.28 V

z_{OUT} = 50Ω
t_{THL} = 2.0 ns (20%-80%)
t_{TLH} = 2.0 ns (20%-80%)
t_P (clock) = 40 ns

$\frac{R_L}{2}$ = 50Ω ±5%
SCOPE INPUT = 50Ω to GND
C_L (test jig) ≤ 5 pF





NOTES:
1. Perform test in accordance with test table; each output is tested separately.
2. All input and output cables are equal lengths of 50 ohm coaxial cables. Wire length should be ≤ .250 (6.35 mm) from t_p in to input pin and t_p out to output pin.
3. Outputs not under test connected to a 100 ohm resistor to ground.
4. Note that observed pulse amplitude is attenuated by one half.

FIGURE 13. Setup and hold test circuit for device type 04

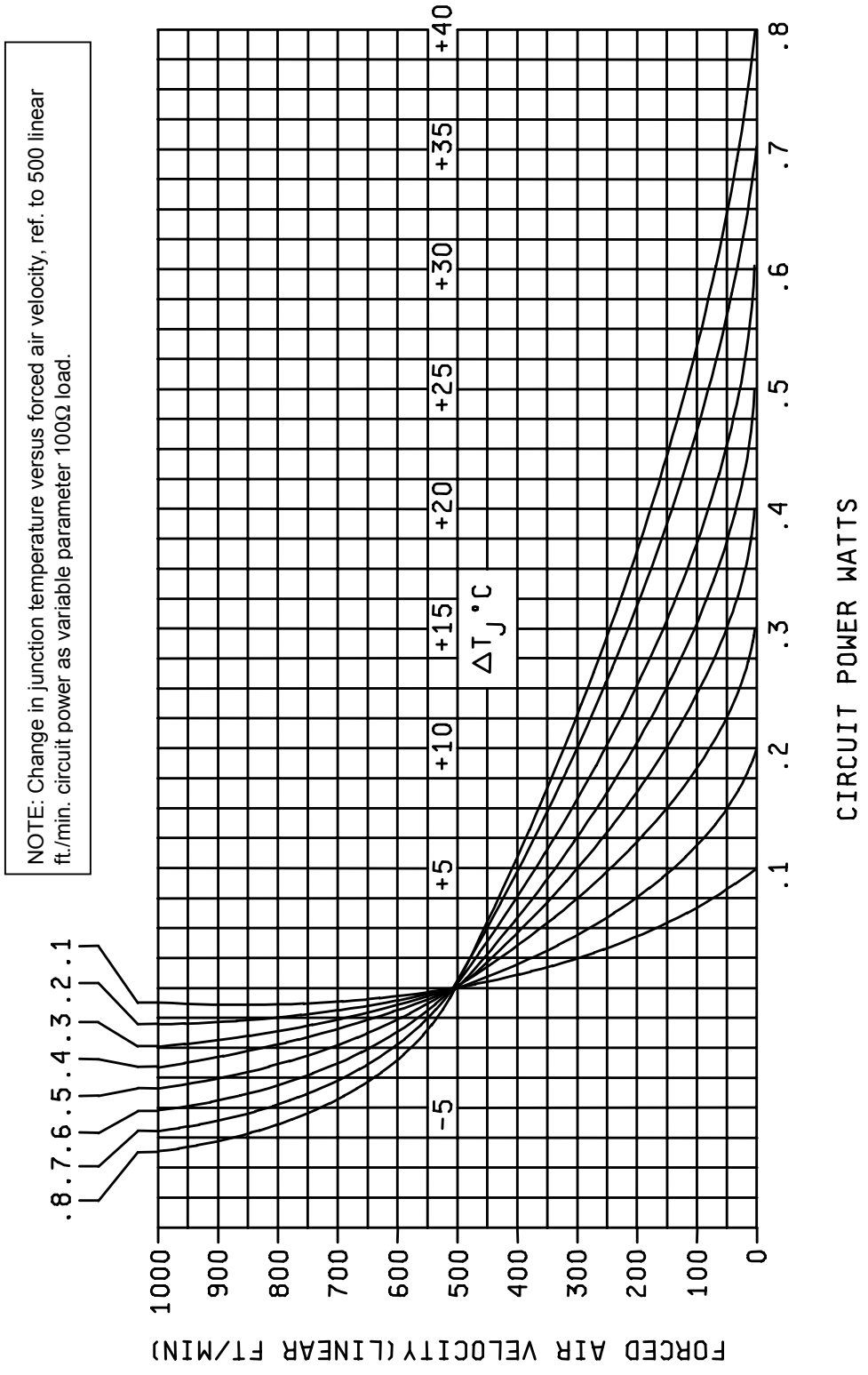


FIGURE 14. Junction temperature versus air velocity case E.

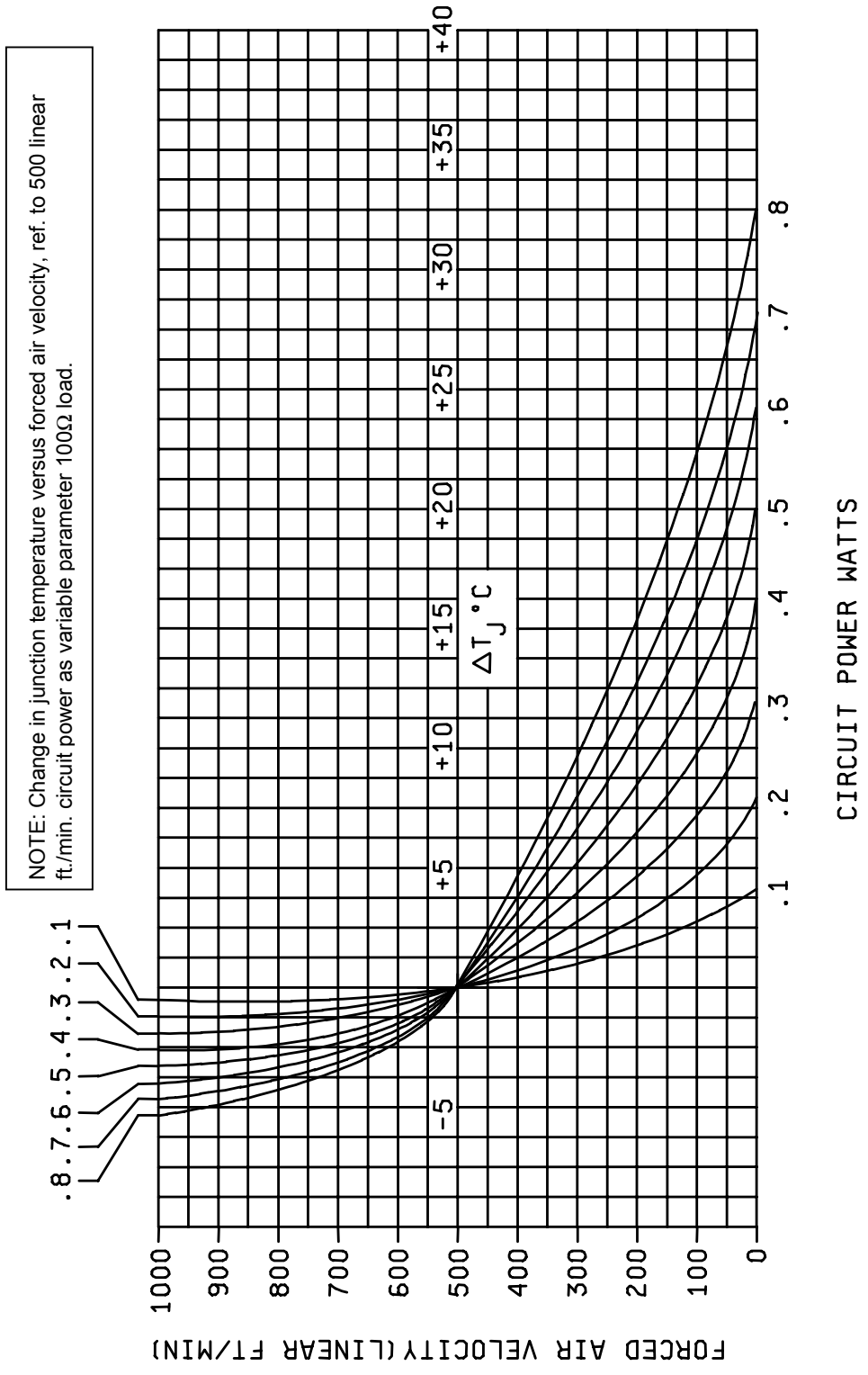
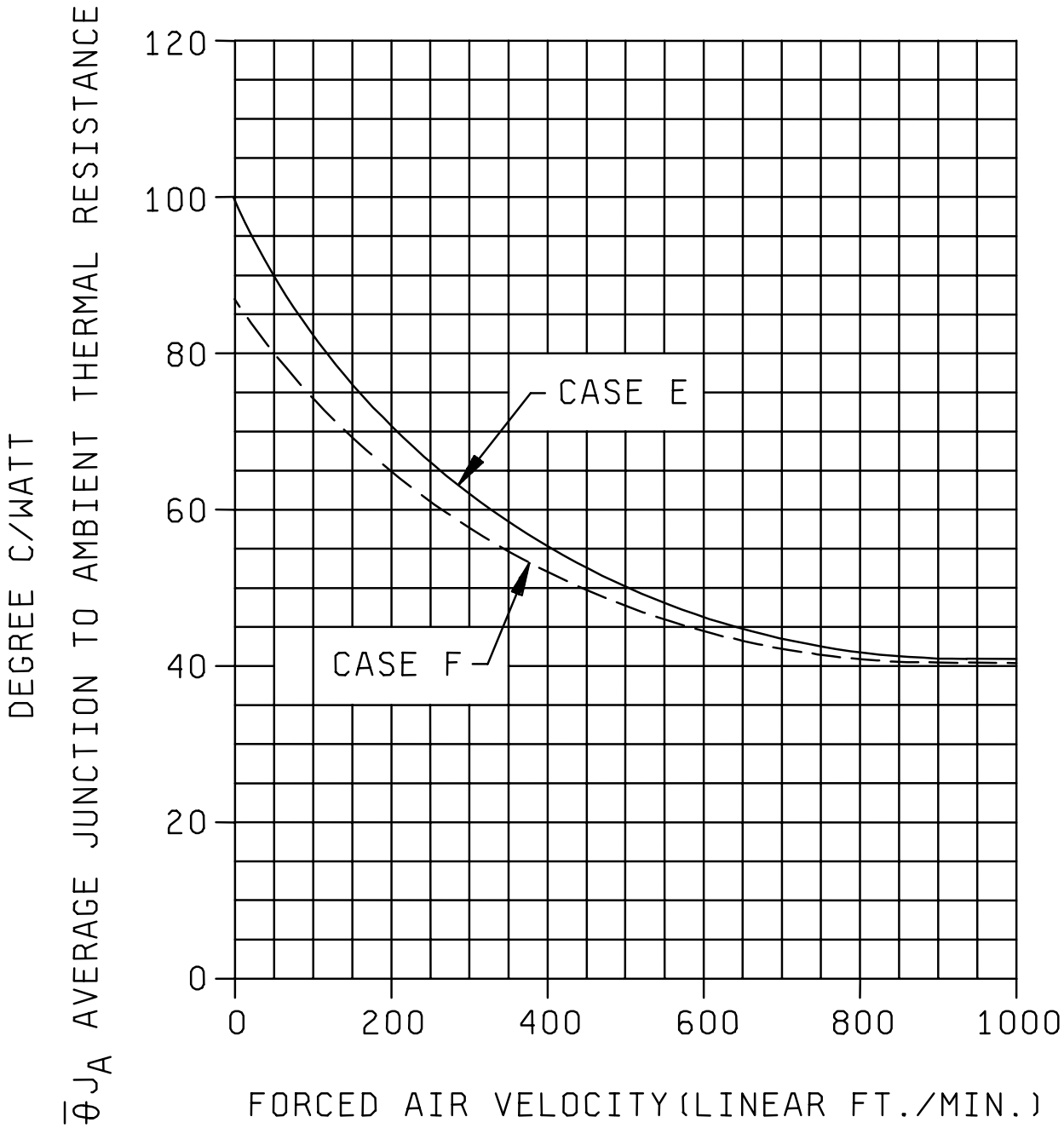


FIGURE 15. Junction temperature versus air velocity case F.

	-55°C (mV/°C)		+25°C (mV/°C)		+125°C (mV/°C)	
Parameter	$+\Delta T_J$	$-\Delta T_J$	$+\Delta T_J$	$-\Delta T_J$	$+\Delta T_J$	$-\Delta T_J$
V_{OH} max, V_{IH1}	1.25	1.25	1.50	1.25	1.50	1.50
V_{OH} min, V_{OTH}	1.88	1.88	1.05	1.88	1.05	1.05
V_{OL} max, V_{OTL}	0.44	0.44	0.75	0.44	0.75	0.75
V_{OL} min, V_{IL}	0.88	0.88	0.30	0.88	0.30	0.30
V_{ITH}	1.88	1.88	1.05	1.88	1.05	1.05
V_{ITL}	0.44	0.44	0.75	0.44	0.75	0.75

FIGURE 16. Adjustment coefficients for forcing function and test limit compensation.



Note: (θJ_A – vs – Forced air velocity for case (E) and (F).
$T_J = T_C + \theta J_A \times P_D$ (max).

FIGURE 17. Air velocity versus thermal resistance.

TABLE III. Group A inspection for device type 01.
For terminal conditions see table IIIA

Subgroup	Symbol	MIL-STD-883 method	Case E	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Measured terminal	Limits		Unit
			Case F	5	6	7	8	9	10	11	12	13	14	15	16	1	2	3	4				
			Case 2	2	3	4	5	7	8	9	10	12	13	14	15	17	18	19	20				
			Test no.	V_{CC1}	1Q	$1\overline{Q}$	1CLR	1P/S	1CE	1D	V_{EE}	CC	2D	2CE	2P/S	2CLR	$2\overline{Q}$	2Q	V_{CC2}		Min	Max	
1 Tc = 25°C	V_{OH}	3006	1	GND	A	A	V_{IL1}	V_{IH1}	V_{IL1}	V_{IL1}	-5.2 V	V_{IL1}	V_{IL1}	V_{IL1}	V_{IH1}	V_{IL1}	A	A	GND	1Q	-.93	-.78	V
		"	2	"	"	"	V_{IL1}	V_{IH1}	"	"	"	"	"	"	V_{IH1}	V_{IL1}	"	"	"	2Q	"	"	"
		"	3	"	"	"	V_{IH1}	V_{IL1}	"	"	"	"	"	"	V_{IL1}	V_{IH1}	"	"	"	$1\overline{Q}$	"	"	"
		"	4	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	$2\overline{Q}$	"	"	"
2		Same tests and terminal conditions as for subgroup 1, except Tc = 125°C and limits as shown.																			-.825	-.63	V
3		Same tests and terminal conditions as for subgroup 1, except Tc = -55°C and limits as shown.																			-1.08	-.88	V
1 Tc = 25°C	V_{OL}	3007	5	GND	A	A	V_{IH1}	V_{IL1}	V_{IL1}	V_{IL1}	-5.2 V	V_{IL1}	V_{IL1}	V_{IL1}	V_{IL1}	V_{IH1}	A	A	GND	1Q	-1.85	-1.62	V
		"	6	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	2Q	"	"	"
		"	7	"	"	"	V_{IL1}	V_{IH1}	"	"	"	"	"	"	V_{IH1}	V_{IL1}	"	"	"	$1\overline{Q}$	"	"	"
		"	8	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	$2\overline{Q}$	"	"	"
2		Same tests and terminal conditions as for subgroup 1, except Tc = 125°C and limits as shown.																			-1.82	-1.545	V
3		Same tests and terminal conditions as for subgroup 1, except Tc = -55°C and limits as shown.																			-1.92	-1.655	V
1 Tc = 25°C	V_{OTH}		9	GND	A	A	V_{IL1}	V_{IH1}	V_{IL1}	V_{IL1}	-5.2 V	V_{IL1}	V_{IL1}	V_{IL1}	V_{IH1}	V_{IL1}	A	A	GND	1Q	-.95		V
			10	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	2Q	"		"
			11	"	"	"	V_{ITH}	V_{IL1}	"	"	"	"	"	"	V_{IL1}	V_{ITH}	"	"	"	$1\overline{Q}$	"		"
			12	"	"	"	V_{ITH}	"	"	"	"	"	"	"	"	V_{ITH}	"	"	"	$2\overline{Q}$	"		"
			13	"	"	"	V_{IL1}	"	"	"	"	"	"	"	"	V_{IL1}	"	"	"	$1\overline{Q}$	"		"
			14	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	$2\overline{Q}$	"		"
			15	"	"	"	"	V_{ITL}	"	"	"	"	"	"	V_{ITL}	"	"	"	"	$1\overline{Q}$	"		"
			16	"	"	"	"	V_{ITL}	"	"	"	"	"	"	V_{ITL}	"	"	"	"	$2\overline{Q}$	"		"
			17	"	"	"	"	V_{ITH}	"	"	"	"	"	"	V_{ITH}	"	"	"	"	1Q	"		"
			18	"	"	"	"	V_{ITH}	"	"	"	"	"	"	V_{ITH}	"	"	"	"	2Q	"		"
			19	"	"	"	"	V_{IL1}	"	"	"	"	"	"	V_{IL1}	"	"	"	"	1Q	"		"
			20	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	2Q	"		"
			21	"	"	"	V_{ITL}	"	"	"	"	"	"	"	"	V_{ITL}	"	"	"	1Q	"		"
			22	"	"	"	V_{ITL}	"	"	"	"	"	"	"	"	V_{ITL}	"	"	"	2Q	"		"
			23	"	"	"	V_{IL1}	V_{ITH}	"	"	"	"	"	"	V_{ITH}	V_{IL1}	"	"	"	1Q	"		"
			24	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	2Q	"		"
			25	"	"	"	"	"	V_{IH1}	"	"	V_{IH1}	"	V_{IH1}	"	"	"	"	"	1Q	"		"
			26	"	"	"	"	"	V_{IH1}	"	"	V_{IH1}	"	V_{IH1}	"	"	"	"	"	2Q	"		"
			27	"	"	"	V_{IH1}	V_{IL1}	V_{IL1}	"	"	V_{IL1}	"	V_{IL1}	V_{IL1}	V_{IH1}	"	"	"	$1\overline{Q}$	"		"
			28	"	"	"	V_{IH1}	"	"	"	"	"	"	"	"	V_{IH1}	"	"	"	$2\overline{Q}$	"		"
			29	"	"	"	V_{IL1}	"	"	V_{ITH}	"	"	V_{ITH}	"	"	V_{IL1}	"	"	"	$1\overline{Q}$	"		"
			30	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	$2\overline{Q}$	"		"
			31	"	"	"	"	"	V_{ITL}	"	"	V_{ITL}	"	V_{ITL}	"	"	"	"	"	$1\overline{Q}$	"		"
			32	"	"	"	"	"	V_{ITL}	"	"	V_{ITL}	"	V_{ITL}	"	"	"	"	"	$2\overline{Q}$	"		"
			33	"	"	"	"	"	V_{ITH}	"	"	V_{ITH}	"	V_{ITH}	"	"	"	"	"	1Q	"		"
			34	"	"	"	"	"	V_{ITH}	"	"	V_{ITH}	"	V_{ITH}	"	"	"	"	"	2Q	"		"
			35	"	"	"	"	"	V_{IL1}	V_{IL1}	"	V_{IL1}	V_{IL1}	V_{IL1}	"	"	"	"	"	1Q	"		"
			36	"	"	"	"	"	V_{IL1}	"	"	V_{IL1}	"	V_{IL1}	"	"	"	"	"	2Q	"		"
			37	"	"	"	"	"	V_{ITL}	"	"	V_{ITL}	"	V_{ITL}	"	"	"	"	"	1Q	"		"
			38	"	"	"	"	"	V_{ITL}	"	"	V_{ITL}	"	V_{ITL}	"	"	"	"	"	2Q	"		"
			39	"	"	"	"	"	V_{IL1}	V_{IH1}	"	V_{IL1}	V_{IH1}	V_{IL1}	"	"	"	"	"	1Q	"		"
			40	"	"	"	"	"	V_{IL1}	"	"	V_{IL1}	"	V_{IL1}	"	"	"	"	"	2Q	"		"
			41	"	"	"	V_{IH1}	"	V_{IH1}	"	"	V_{IH1}	"	V_{IH1}	"	V_{IH1}	"	"	"	$1\overline{Q}$	"		"
			42	"	"	"	V_{IH1}	"	V_{IH1}	"	"	V_{IH1}	"	V_{IH1}	"	V_{IH1}	"	"	"	$2\overline{Q}$	"		"
2		Same tests and terminal conditions as for subgroup 1, except Tc = 125°C and limits as shown.																			-.845		V
3		Same tests and terminal conditions as for subgroup 1, except Tc = -55°C and limits as shown.																			-1.1		V

TABLE III. Group A inspection for device type 01 - Continued.
For terminal conditions see table IIIA

Subgroup	Symbol	MIL-STD-883 method	Case E	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Measured terminal	Limits		Unit
			Case F	5	6	7	8	9	10	11	12	13	14	15	16	1	2	3	4				
			Case 2	2	3	4	5	7	8	9	10	12	13	14	15	17	18	19	20				
			Test no.	V_{CC1}	1Q	$1\overline{Q}$	1CLR	1P/S	1CE	1D	V_{EE}	CC	2D	2CE	2P/S	2CLR	$2\overline{Q}$	2Q	V_{CC2}		Min	Max	
1	V_{OTL}		43	GND	A	A	V_{IL1}	V_{IH1}	V_{IL1}	V_{IL1}	-5.2 V	V_{IL1}	V_{IL1}	V_{IL1}	V_{IH1}	V_{IL1}	A	A	GND	$1\overline{Q}$		-1.6	V
Tc = 25°C			44	"	"	"	V_{IL1}	V_{IH1}	"	"	"	"	"	"	V_{IH1}	V_{IL1}	"	"	"	$2\overline{Q}$		"	"
			45	"	"	"	V_{ITH}	V_{IL1}	"	"	"	"	"	"	V_{IL1}	V_{ITH}	"	"	"	$1\overline{Q}$		"	"
			46	"	"	"	V_{ITH}	"	"	"	"	"	"	"	"	V_{ITH}	"	"	"	$2\overline{Q}$		"	"
			47	"	"	"	V_{IL1}	"	"	"	"	"	"	"	"	V_{IL1}	"	"	"	1Q		"	"
			48	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	2Q		"	"
			49	"	"	"	"	V_{ITL}	"	"	"	"	"	"	V_{ITL}	"	"	"	"	1Q		"	"
			50	"	"	"	"	V_{ITL}	"	"	"	"	"	"	V_{ITL}	"	"	"	"	2Q		"	"
			51					V_{ITH}							V_{ITH}					1Q		"	"
			52	"	"	"	"	V_{ITH}	"	"	"	"	"	"	V_{ITH}	"	"	"	"	2Q		"	"
			53	"	"	"	"	V_{IL1}	"	"	"	"	"	"	V_{IL1}	"	"	"	"	$1\overline{Q}$		"	"
			54	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	$2\overline{Q}$		"	"
			55	"	"	"	V_{ITL}	"	"	"	"	"	"	"	"	V_{ITL}	"	"	"	$1\overline{Q}$		"	"
			56	"	"	"	V_{ITL}	"	"	"	"	"	"	"	"	V_{ITL}	"	"	"	$2\overline{Q}$		"	"
			57	"	"	"	V_{IL1}	V_{ITH}	"	"	"	"	"	"	V_{ITH}	V_{IL1}	"	"	"	$1\overline{Q}$		"	"
			58	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	$2\overline{Q}$		"	"
			59	"	"	"	"	"	V_{IH1}	"	"	V_{IH1}	"	V_{IH1}	"	"	"	"	"	$1\overline{Q}$		"	"
			60	"	"	"	"	"	V_{IH1}	"	"	V_{IH1}	"	V_{IH1}	"	"	"	"	"	$2\overline{Q}$		"	"
			61	"	"	"	V_{IH1}	V_{IL1}	V_{IL1}	"	"	V_{IL1}	"	V_{IL1}	V_{IL1}	V_{IH1}	"	"	"	1Q		"	"
			62	"	"	"	V_{IH1}	"	"	"	"	"	"	"	"	V_{IH1}	"	"	"	2Q		"	"
			63	"	"	"	V_{IL1}	"	"	V_{ITH}	"	"	V_{ITH}	"	"	V_{IL1}	"	"	"	1Q		"	"
			64	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	2Q		"	"
			65	"	"	"	"	"	V_{ITL}	"	"	V_{ITL}	"	V_{ITL}	"	"	"	"	"	1Q		"	"
			66	"	"	"	"	"	V_{ITL}	"	"	V_{ITL}	"	V_{ITL}	"	"	"	"	"	2Q		"	"
			67	"	"	"	"	"	V_{ITH}	"	"	V_{ITH}	"	V_{ITH}	"	"	"	"	"	$1\overline{Q}$		"	"
			68	"	"	"	"	"	V_{ITH}	"	"	V_{ITH}	"	V_{ITH}	"	"	"	"	"	$2\overline{Q}$		"	"
			69	"	"	"	"	"	V_{IL1}	V_{IL1}	"	V_{IL1}	V_{IL1}	V_{IL1}	"	"	"	"	"	$1\overline{Q}$		"	"
			70	"	"	"	"	"	V_{IL1}	"	"	V_{IL1}	"	V_{IL1}	"	"	"	"	"	$2\overline{Q}$		"	"
			71	"	"	"	"	"	V_{ITL}	"	"	V_{ITL}	"	V_{ITL}	"	"	"	"	"	$1\overline{Q}$		"	"
			72	"	"	"	"	"	V_{ITL}	"	"	V_{ITL}	"	V_{ITL}	"	"	"	"	"	$2\overline{Q}$		"	"
			73	"	"	"	"	"	V_{IL1}	V_{IH1}	"	V_{IL1}	V_{IH1}	V_{IL1}	"	"	"	"	"	$1\overline{Q}$		"	"
			74	"	"	"	"	"	V_{IL1}	"	"	V_{IL1}	"	V_{IL1}	"	"	"	"	"	$2\overline{Q}$		"	"
			75	"	"	"	V_{IH1}	"	V_{IH1}	"	"	V_{IH1}	"	V_{IH1}	"	V_{IH1}	"	"	"	1Q		"	"
			76	"	"	"	V_{IH1}	"	V_{IH1}	"	"	V_{IH1}	"	V_{IH1}	"	V_{IH1}	"	"	"	2Q		"	"
2		Same tests and terminal conditions as for subgroup 1, except Tc = 125°C and limits as shown.																				-1.525	V
3		Same tests and terminal conditions as for subgroup 1, except Tc = -55°C and limits as shown.																				-1.635	V
1 Tc = 25°C	I_{EE}	3005	77	GND							-5.2 V								GND	V_{EE}	-56		mA
2		Same tests and terminal conditions as for subgroup 1, except Tc = 125°C and limits as shown.																			-62		"
3		Same tests and terminal conditions as for subgroup 1, except Tc = -55°C and limits as shown.																			-62		"
1	I_{IH1}	3010	78	GND					V_{IH1}		-5.2 V								GND	1CE		220	µA
Tc = 25°C		"	79	"							"			V_{IH1}					"	2CE		220	"
2		Same tests and terminal conditions as for subgroup 1, except Tc = 125°C and limits as shown.																				375	"
3		Same tests and terminal conditions as for subgroup 1, except Tc = -55°C and limits as shown.																				375	"

TABLE III. Group A inspection for device type 01 - Continued.
For terminal conditions see table IIIA

Subgroup	Symbol	MIL-STD-883 method	Case E	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Measured terminal	Limits		Unit
			Case F	5	6	7	8	9	10	11	12	13	14	15	16	1	2	3	4				
			Case 2	2	3	4	5	7	8	9	10	12	13	14	15	17	18	19	20				
			Test no.	V_{CC1}	1Q	$1\overline{Q}$	1CLR	1P/S	1CE	1D	V_{EE}	CC	2D	2CE	2P/S	2CLR	$2\overline{Q}$	2Q	V_{CC2}		Min	Max	
1 Tc = 25°C	I_{IH2}	3010 " " "	80 81 82 83	GND " " "			V_{IH1}	V_{IH1}			-5.2 V " " "				V_{IH1}	V_{IH1}			GND " " "	1CLR 2CLR 1P/S 2P/S		330 " " "	µA " " "
2		Same tests and terminal conditions as for subgroup 1, except Tc = 125°C and limits as shown.																				565	µA
3		Same tests and terminal conditions as for subgroup 1, except Tc = -55°C and limits as shown.																				565	µA
1 Tc = 25°C	I_{IH3}	3010 "	84 85	GND "						V_{IH1}	-5.2 V "		V_{IH1}						GND "	1D 2D		245 "	µA "
2		Same tests and terminal conditions as for subgroup 1, except Tc = 125°C and limits as shown.																				420	µA
3		Same tests and terminal conditions as for subgroup 1, except Tc = -55°C and limits as shown.																				420	µA
1 Tc = 25°C	I_{IH4}	3010	86	GND							-5.2 V	V_{IH1}							GND	CC		265	µA
2		Same tests and terminal conditions as for subgroup 1, except Tc = 125°C and limits as shown.																				450	µA
3		Same tests and terminal conditions as for subgroup 1, except Tc = -55°C and limits as shown.																				450	µA
1 Tc = 25°C	I_{IL}	3009 " " " " " " " "	87 88 89 90 91 92 93 94 95	GND " " " " " " " "			V_{IL1}	V_{IL1}	V_{IL1}	V_{IL1}	-5.2 V " " " " " " " "	V_{IL1}	V_{IL1}	V_{IL1}	V_{IL1}	V_{IL1}			GND " " " " " " " "	1CLR 1P/S 1CE 1D 2D 2CE 2P/S 2CLR CC	0.5 " " " " " " " "		µA " " " " " " " "
2		Same tests and terminal conditions as for subgroup 1, except Tc = 125°C and limits as shown.																			0.3		µA
3		Same tests and terminal conditions as for subgroup 1, except Tc = -55°C and limits as shown.																			0.5		µA
9 Tc = 25°C	F_{MAX}	Fig 3 Fig 3	96 97	+2.0 V "	OUT B	B "			IN	$\overline{Q}$ 1	-3.2 V "		$\overline{Q}$ 2	IN			B "	B OUT	+2.0 V "	1Q 2Q	62.5 62.5		MHz "
10		Same tests and terminal conditions as for subgroup 1, except Tc = 125°C and limits as shown.																			62.5		MHz
11		Same tests and terminal conditions as for subgroup 1, except Tc = -55°C and limits as shown.																			52.5		MHz
9 Tc = 25°C	t_{TLH}	3004 Fig 4 " " Fig 5 " " "	98 99 100 101 102 103 104 105	+2.0 V " " " " " " "	B OUT B " OUT B " "	OUT B " " " OUT B "	IN IN	IN IN	IN IN	IN IN	-3.2 V " " " " " " "		IN IN	IN IN	IN IN	IN IN	B " OUT B " " OUT B	B " " OUT B " OUT B	+2.0 V " " " " " " "	$1\overline{Q}$ 1Q $2\overline{Q}$ 2Q 1Q $1\overline{Q}$ 2Q $2\overline{Q}$	1.1 " " " " " " "	4.5 " " " " " " "	ns " " " " " " "
10		Same tests and terminal conditions as for subgroup 9, except Tc = 125°C and limits as shown.																			1.1	4.9	ns
11		Same tests and terminal conditions as for subgroup 9, except Tc = -55°C and limits as shown.																			1.0	4.6	ns
9 Tc = 25°C	t_{THL}	3004 Fig 4 " " Fig 5 " " "	106 107 108 109 110 111 112 113	+2.0 V " " " " " " "	OUT B " " OUT B " "	B OUT B " " OUT B "	IN IN	IN IN	IN IN	IN IN	-3.2 V " " " " " " "		IN IN	IN IN	IN IN	IN IN	B " " OUT B " OUT B	B " " OUT B " OUT B	+2.0 V " " " " " " "	1Q $1\overline{Q}$ 2Q $2\overline{Q}$ 1Q $1\overline{Q}$ 2Q $2\overline{Q}$	1.1 " " " " " " "	4.5 " " " " " " "	ns " " " " " " "
10		Same tests and terminal conditions as for subgroup 9, except Tc = 125°C and limits as shown.																			1.1	4.9	ns
11		Same tests and terminal conditions as for subgroup 9, except Tc = -55°C and limits as shown.																			1.0	4.6	ns

TABLE III. Group A inspection for device type 01 - Continued.
For terminal conditions see table IIIA

Subgroup	Symbol	MIL-STD-883 method	Case E	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Measured terminal	Limits		Unit
			Case F	5	6	7	8	9	10	11	12	13	14	15	16	1	2	3	4				
			Case 2	2	3	4	5	7	8	9	10	12	13	14	15	17	18	19	20				
			Test no.	V_{CC1}	1Q	$1\overline{Q}$	1CLR	1P/S	1CE	1D	V_{EE}	CC	2D	2CE	2P/S	2CLR	$2\overline{Q}$	2Q	V_{CC2}		Min	Max	
9	t_{PLH1}	3003	114	+2.0 V	B	OUT	IN	IN			-3.2 V						B	B	+2.0 V	$1\overline{Q}$	1.2	4.3	ns
Tc = 25°C		Fig 4	115	"	OUT	B	IN	IN			"						"	"	"	1Q	"	"	"
		"	116	"	B	"					"				IN	IN	OUT	"	"	$2\overline{Q}$	"	"	"
		"	117	"	"	"					"				IN	IN	B	OUT	"	2Q	"	"	"
10		Same tests and terminal conditions as for subgroup 9, except Tc = 125°C and limits as shown.																			1.2	4.9	ns
11		Same tests and terminal conditions as for subgroup 9, except Tc = -55°C and limits as shown.																			1.1	4.5	ns
9	t_{PLH2}	3003	118	+2.0 V	OUT	B			IN	IN	-3.2 V						B	B	+2.0 V	1Q	1.5	4.5	ns
Tc = 25°C		Fig 4	119	"	B	OUT			IN	IN	"						"	"	"	$1\overline{Q}$	"	"	"
		"	120	"	"	B					"		IN	IN			"	OUT	"	2Q	"	"	"
		"	121	"	"	"					"		IN	IN			OUT	B	"	$2\overline{Q}$	"	"	"
10		Same tests and terminal conditions as for subgroup 9, except Tc = 125°C and limits as shown.																			1.5	5.0	ns
11		Same tests and terminal conditions as for subgroup 9, except Tc = -55°C and limits as shown.																			1.4	4.6	ns
9	t_{PHL1}	3003	122	+2.0 V	OUT	B	IN	IN			-3.2 V						B	B	+2.0 V	1Q	1.2	4.3	ns
Tc = 25°C		Fig 5	123	"	B	OUT	IN	IN			"						"	"	"	$1\overline{Q}$	"	"	"
		"	124	"	"	B					"				IN	IN	"	OUT	"	2Q	"	"	"
		"	125	"	"	"					"				IN	IN	OUT	B	"	$2\overline{Q}$	"	"	"
10		Same tests and terminal conditions as for subgroup 9, except Tc = 125°C and limits as shown.																			1.2	4.9	ns
11		Same tests and terminal conditions as for subgroup 9, except Tc = -55°C and limits as shown.																			1.1	4.5	ns
9	t_{PHL2}	3003	126	+2.0 V	OUT	B			IN	IN	-3.2 V						B	B	+2.0 V	1Q	1.5	4.5	ns
Tc = 25°C		Fig 5	127	"	B	OUT			IN	IN	"						"	"	"	$1\overline{Q}$	"	"	"
		"	128	"	"	B					"		IN	IN			"	OUT	"	2Q	"	"	"
		"	129	"	"	"					"		IN	IN			OUT	B	"	$2\overline{Q}$	"	"	"
10		Same tests and terminal conditions as for subgroup 9, except Tc = 125°C and limits as shown.																			1.5	5.0	ns
11		Same tests and terminal conditions as for subgroup 9, except Tc = -55°C and limits as shown.																			1.4	4.6	ns

TABLE III. Group A inspection for device type 02.
For terminal conditions see table IIIA

Subgroup	Symbol	MIL-STD-883 method	Case E / Case F / Case 2 / Test no.	1 / 5 / 2 / V_{CC1}	2 / 6 / 3 / 1Q	3 / 7 / 4 / $1\overline{Q}$	4 / 8 / 5 / 1CLR	5 / 9 / 7 / 1P/S	6 / 10 / 8 / 1CE	7 / 11 / 9 / 1D	8 / 12 / 10 / V_{EE}	9 / 13 / 12 / CC	10 / 14 / 13 / 2D	11 / 15 / 14 / 2CE	12 / 16 / 15 / 2P/S	13 / 1 / 17 / 2CLR	14 / 2 / 18 / $2\overline{Q}$	15 / 3 / 19 / 2Q	16 / 4 / 20 / V_{CC2}	Measured terminal	Limits Min	Limits Max	Unit
1 Tc = 25°C	V_{OH}	3006	1	GND	A	A	V_{IL1}	V_{IH1}	V_{IL1}	V_{IL1}	-5.2 V	V_{IL1}	V_{IL1}	V_{IL1}	V_{IH1}	V_{IL1}	A	A	GND	1Q	-.93	-.78	V
		"	2	"	"	"	V_{IL1}	V_{IH1}	"	"	"	"	"	"	V_{IH1}	V_{IL1}	"	"	"	2Q	"	"	"
		"	3	"	"	"	V_{IH1}	V_{IL1}	"	"	"	"	"	"	V_{IL1}	V_{IH1}	"	"	"	$1\overline{Q}$	"	"	"
		"	4	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	$2\overline{Q}$	"	"	"
2		Same tests and terminal conditions as for subgroup 1, except Tc = 125°C and limits as shown.																			-.825	-.63	V
3		Same tests and terminal conditions as for subgroup 1, except Tc = -55°C and limits as shown.																			-1.08	-.88	V
1 Tc = 25°C	V_{OL}	3007	5	GND	A	A	V_{IH1}	V_{IL1}	V_{IL1}	V_{IL1}	-5.2 V	V_{IL1}	V_{IL1}	V_{IL1}	V_{IL1}	V_{IH1}	A	A	GND	1Q	-1.85	-1.62	V
		"	6	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	2Q	"	"	"
		"	7	"	"	"	V_{IL1}	V_{IH1}	"	"	"	"	"	"	V_{IH1}	V_{IL1}	"	"	"	$1\overline{Q}$	"	"	"
		"	8	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	$2\overline{Q}$	"	"	"
2		Same tests and terminal conditions as for subgroup 1, except Tc = 125°C and limits as shown.																			-1.82	-1.545	V
3		Same tests and terminal conditions as for subgroup 1, except Tc = -55°C and limits as shown.																			-1.92	-1.655	V
1 Tc = 25°C	V_{OTH}		9	GND	A	A	V_{IL1}	V_{IH1}	V_{IL1}	V_{IL1}	-5.2 V	V_{IL1}	V_{IL1}	V_{IL1}	V_{IH1}	V_{IL1}	A	A	GND	1Q	-.95		V
			10	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	2Q	"		"
			11	"	"	"	V_{ITH}	V_{IL1}	"	"	"	"	"	"	V_{IL1}	V_{ITH}	"	"	"	$1\overline{Q}$	"		"
			12	"	"	"	V_{ITH}	"	"	"	"	"	"	"	"	V_{ITH}	"	"	"	$2\overline{Q}$	"		"
			13	"	"	"	V_{IL1}	"	"	"	"	"	"	"	"	V_{IL1}	"	"	"	$1\overline{Q}$	"		"
			14	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	$2\overline{Q}$	"		"
			15	"	"	"	"	V_{ITL}	"	"	"	"	"	"	V_{ITL}	"	"	"	"	$1\overline{Q}$	"		"
			16	"	"	"	"	V_{ITL}	"	"	"	"	"	"	V_{ITL}	"	"	"	"	$2\overline{Q}$	"		"
			17	"	"	"	"	V_{ITH}	"	"	"	"	"	"	V_{ITH}	"	"	"	"	1Q	"		"
			18	"	"	"	"	V_{ITH}	"	"	"	"	"	"	V_{ITH}	"	"	"	"	2Q	"		"
			19	"	"	"	"	V_{IL1}	"	"	"	"	"	"	V_{IL1}	"	"	"	"	1Q	"		"
			20	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	2Q	"		"
			21	"	"	"	V_{ITL}	"	"	"	"	"	"	"	"	V_{ITL}	"	"	"	1Q	"		"
			22	"	"	"	V_{ITL}	"	"	"	"	"	"	"	"	V_{ITL}	"	"	"	2Q	"		"
			23	"	"	"	V_{IL1}	V_{ITH}	"	"	"	"	"	"	V_{ITH}	V_{IL1}	"	"	"	1Q	"		"
			24	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	2Q	"		"
			25	"	"	"	"	"	V_{IH1}	"	"	V_{IH1}	"	V_{IH1}	"	"	"	"	"	1Q	"		"
			26	"	"	"	"	"	V_{IH1}	"	"	V_{IH1}	"	V_{IH1}	"	"	"	"	"	2Q	"		"
			27	"	"	"	V_{IH1}	V_{IL1}	V_{IL1}	"	"	V_{IL1}	"	V_{IL1}	V_{IL1}	V_{IH1}	"	"	"	$1\overline{Q}$	"		"
			28	"	"	"	V_{IH1}	"	"	"	"	"	"	"	"	V_{IH1}	"	"	"	$2\overline{Q}$	"		"
			29	"	"	"	V_{IL1}	"	"	V_{ITH}	"	"	V_{ITH}	"	"	V_{IL1}	"	"	"	$1\overline{Q}$	"		"
			30	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	$2\overline{Q}$	"		"
			31	"	"	"	"	"	V_{ITL}	"	"	V_{ITL}	"	V_{ITL}	"	"	"	"	"	$1\overline{Q}$	"		"
			32	"	"	"	"	"	V_{ITL}	"	"	V_{ITL}	"	V_{ITL}	"	"	"	"	"	$2\overline{Q}$	"		"
			33	"	"	"	"	"	V_{ITH}	"	"	V_{ITH}	"	V_{ITH}	"	"	"	"	"	1Q	"		"
			34	"	"	"	"	"	V_{ITH}	"	"	V_{ITH}	"	V_{ITH}	"	"	"	"	"	2Q	"		"
			35	"	"	"	"	"	V_{IL1}	V_{IL1}	"	V_{IL1}	V_{IL1}	V_{IL1}	"	"	"	"	"	1Q	"		"
			36	"	"	"	"	"	V_{IL1}	"	"	V_{IL1}	"	V_{IL1}	"	"	"	"	"	2Q	"		"
			37	"	"	"	"	"	V_{ITL}	"	"	V_{ITL}	"	V_{ITL}	"	"	"	"	"	1Q	"		"
			38	"	"	"	"	"	V_{ITL}	"	"	V_{ITL}	"	V_{ITL}	"	"	"	"	"	2Q	"		"
			39	"	"	"	"	"	V_{IL1}	V_{IH1}	"	V_{IL1}	V_{IH1}	V_{IL1}	"	"	"	"	"	1Q	"		"
			40	"	"	"	"	"	V_{IL1}	"	"	V_{IL1}	"	V_{IL1}	"	"	"	"	"	2Q	"		"
			41	"	"	"	V_{IH1}	"	V_{IH1}	"	"	V_{IH1}	"	V_{IH1}	"	V_{IH1}	"	"	"	$1\overline{Q}$	"		"
			42	"	"	"	V_{IH1}	"	V_{IH1}	"	"	V_{IH1}	"	V_{IH1}	"	V_{IH1}	"	"	"	$2\overline{Q}$	"		"
2		Same tests and terminal conditions as for subgroup 1, except Tc = 125°C and limits as shown.																			-.845		V
3		Same tests and terminal conditions as for subgroup 1, except Tc = -55°C and limits as shown.																			-1.1		V

TABLE III. Group A inspection for device type 02 - Continued.
For terminal conditions see table IIIA

Subgroup	Symbol	MIL-STD-883 method	Case E	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Measured terminal	Limits		Unit
			Case F	5	6	7	8	9	10	11	12	13	14	15	16	1	2	3	4				
			Case 2	2	3	4	5	7	8	9	10	12	13	14	15	17	18	19	20				
			Test no.	V_{CC1}	1Q	$1\overline{Q}$	1CLR	1P/S	1CE	1D	V_{EE}	CC	2D	2CE	2P/S	2CLR	$2\overline{Q}$	2Q	V_{CC2}		Min	Max	
1	V_{OTL}		43	GND	A	A	V_{IL1}	V_{IH1}	V_{IL1}	V_{IL1}	-5.2 V	V_{IL1}	V_{IL1}	V_{IL1}	V_{IH1}	V_{IL1}	A	A	GND	$1\overline{Q}$		-1.6	V
Tc = 25°C			44	"	"	"	V_{IL1}	V_{IH1}	"	"	"	"	"	"	V_{IH1}	V_{IL1}	"	"	"	$2\overline{Q}$		"	"
			45	"	"	"	V_{ITH}	V_{IL1}	"	"	"	"	"	"	V_{IL1}	V_{ITH}	"	"	"	$1\overline{Q}$		"	"
			46	"	"	"	V_{ITH}	"	"	"	"	"	"	"	"	V_{ITH}	"	"	"	$2\overline{Q}$		"	"
			47	"	"	"	V_{IL1}	"	"	"	"	"	"	"	"	V_{IL1}	"	"	"	1Q		"	"
			48	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	2Q		"	"
			49	"	"	"	"	V_{ITL}	"	"	"	"	"	"	V_{ITL}	"	"	"	"	1Q		"	"
			50	"	"	"	"	V_{ITL}	"	"	"	"	"	"	V_{ITL}	"	"	"	"	2Q		"	"
			51					V_{ITH}							V_{ITH}					1Q		"	"
			52	"	"	"	"	V_{ITH}	"	"	"	"	"	"	V_{ITH}	"	"	"	"	2Q		"	"
			53	"	"	"	"	V_{IL1}	"	"	"	"	"	"	V_{IL1}	"	"	"	"	$1\overline{Q}$		"	"
			54	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	$2\overline{Q}$		"	"
			55	"	"	"	V_{ITL}	"	"	"	"	"	"	"	"	V_{ITL}	"	"	"	$1\overline{Q}$		"	"
			56	"	"	"	V_{ITL}	"	"	"	"	"	"	"	"	V_{ITL}	"	"	"	$2\overline{Q}$		"	"
			57	"	"	"	V_{IL1}	V_{ITH}	"	"	"	"	"	"	V_{ITH}	V_{IL1}	"	"	"	$1\overline{Q}$		"	"
			58	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	$2\overline{Q}$		"	"
			59	"	"	"	"	"	V_{IH1}	"	"	V_{IH1}	"	V_{IH1}	"	"	"	"	"	$1\overline{Q}$		"	"
			60	"	"	"	"	"	V_{IH1}	"	"	V_{IH1}	"	V_{IH1}	"	"	"	"	"	$2\overline{Q}$		"	"
			61	"	"	"	V_{IH1}	V_{IL1}	V_{IL1}	"	"	V_{IL1}	"	V_{IL1}	V_{IL1}	V_{IH1}	"	"	"	1Q		"	"
			62	"	"	"	V_{IH1}	"	"	"	"	"	"	"	"	V_{IH1}	"	"	"	2Q		"	"
			63	"	"	"	V_{IL1}	"	"	V_{ITH}	"	"	V_{ITH}	"	"	V_{IL1}	"	"	"	1Q		"	"
			64	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	2Q		"	"
			65	"	"	"	"	"	V_{ITL}	"	"	V_{ITL}	"	V_{ITL}	"	"	"	"	"	1Q		"	"
			66	"	"	"	"	"	V_{ITL}	"	"	V_{ITL}	"	V_{ITL}	"	"	"	"	"	2Q		"	"
			67	"	"	"	"	"	V_{ITH}	"	"	V_{ITH}	"	V_{ITH}	"	"	"	"	"	$1\overline{Q}$		"	"
			68	"	"	"	"	"	V_{ITH}	"	"	V_{ITH}	"	V_{ITH}	"	"	"	"	"	$2\overline{Q}$		"	"
			69	"	"	"	"	"	V_{IL1}	V_{IL1}	"	V_{IL1}	V_{IL1}	V_{IL1}	"	"	"	"	"	$1\overline{Q}$		"	"
			70	"	"	"	"	"	V_{IL1}	"	"	V_{IL1}	"	V_{IL1}	"	"	"	"	"	$2\overline{Q}$		"	"
			71	"	"	"	"	"	V_{ITL}	"	"	V_{ITL}	"	V_{ITL}	"	"	"	"	"	$1\overline{Q}$		"	"
			72	"	"	"	"	"	V_{ITL}	"	"	V_{ITL}	"	V_{ITL}	"	"	"	"	"	$2\overline{Q}$		"	"
			73	"	"	"	"	"	V_{IL1}	V_{IH1}	"	V_{IL1}	V_{IH1}	V_{IL1}	"	"	"	"	"	$1\overline{Q}$		"	"
			74	"	"	"	"	"	V_{IL1}	"	"	V_{IL1}	"	V_{IL1}	"	"	"	"	"	$2\overline{Q}$		"	"
			75	"	"	"	V_{IH1}	"	V_{IH1}	"	"	V_{IH1}	"	V_{IH1}	"	V_{IH1}	"	"	"	1Q		"	"
			76	"	"	"	V_{IH1}	"	V_{IH1}	"	"	V_{IH1}	"	V_{IH1}	"	V_{IH1}	"	"	"	2Q		"	"
2		Same tests and terminal conditions as for subgroup 1, except Tc = 125°C and limits as shown.																				-1.525	V
3		Same tests and terminal conditions as for subgroup 1, except Tc = -55°C and limits as shown.																				-1.635	V
1 Tc = 25°C	I_{EE}	3005	77	GND							-5.2 V								GND	V_{EE}	-65		mA
2		Same tests and terminal conditions as for subgroup 1, except Tc = 125°C and limits as shown.																			-72		"
3		Same tests and terminal conditions as for subgroup 1, except Tc = -55°C and limits as shown.																			-72		"
1	I_{IH1}	3010	78	GND					V_{IH1}		-5.2 V								GND	1CE		220	µA
Tc = 25°C		"	79	"							"			V_{IH1}					"	2CE		220	"
2		Same tests and terminal conditions as for subgroup 1, except Tc = 125°C and limits as shown.																				375	"
3		Same tests and terminal conditions as for subgroup 1, except Tc = -55°C and limits as shown.																				375	"

TABLE III. Group A inspection for device type 02 - Continued.
For terminal conditions see table IIIA

Subgroup	Symbol	MIL-STD-883 method	Case E	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Measured terminal	Limits		Unit
			Case F	5	6	7	8	9	10	11	12	13	14	15	16	1	2	3	4				
			Case 2	2	3	4	5	7	8	9	10	12	13	14	15	17	18	19	20				
			Test no.	V_{CC1}	1Q	$1\overline{Q}$	1CLR	1P/S	1CE	1D	V_{EE}	CC	2D	2CE	2P/S	2CLR	$2\overline{Q}$	2Q	V_{CC2}		Min	Max	
1 Tc = 25°C	I_{IH2}	3010 " " "	80 81 82 83	GND " " "			V_{IH1}	V_{IH1}			-5.2 V " " "				V_{IH1}	V_{IH1}				GND " " "	1CLR 1P/S 2P/S 2CLR		410 " " "	µA " " "
2		Same tests and terminal conditions as for subgroup 1, except Tc = 125°C and limits as shown.																				700	µA
3		Same tests and terminal conditions as for subgroup 1, except Tc = -55°C and limits as shown.																				700	µA
1 Tc = 25°C	I_{IH3}	3010 "	84 85	GND "						V_{IH1}	-5.2 V "		V_{IH1}						GND "	1D 2D		220 "	µA "
2		Same tests and terminal conditions as for subgroup 1, except Tc = 125°C and limits as shown.																				375	µA
3		Same tests and terminal conditions as for subgroup 1, except Tc = -55°C and limits as shown.																				375	µA
1 Tc = 25°C	I_{IH4}	3010	86	GND							-5.2 V	V_{IH1}							GND	CC		290	µA
2		Same tests and terminal conditions as for subgroup 1, except Tc = 125°C and limits as shown.																				495	µA
3		Same tests and terminal conditions as for subgroup 1, except Tc = -55°C and limits as shown.																				495	µA
1 Tc = 25°C	I_{IL}	3009 " " " " " " " "	87 88 89 90 91 92 93 94 95	GND " " " " " " " "			V_{IL1}	V_{IL1}	V_{IL1}	V_{IL1}	-5.2 V " " " " " " " "	V_{IL1}	V_{IL1}	V_{IL1}	V_{IL1}	V_{IL1}				GND " " " " " " " "	1CLR 1P/S 1CE 1D 2D 2CE 2P/S 2CLR CC	0.5 " " " " " " " "		µA " " " " " " " "
2		Same tests and terminal conditions as for subgroup 1, except Tc = 125°C and limits as shown.																			0.3		µA
3		Same tests and terminal conditions as for subgroup 1, except Tc = -55°C and limits as shown.																			0.5		µA
9 Tc = 25°C	F_{MAX}	Fig 3 Fig 3	96 97	+2.0 V "	OUT B	B "			IN	$\overline{Q}$ 1	-3.2 V "		$\overline{Q}$ 2	IN			B "	B OUT	+2.0 V "	1Q 2Q	100 "		MHz "
10		Same tests and terminal conditions as for subgroup 1, except Tc = 125°C and limits as shown.																			100		MHz
11		Same tests and terminal conditions as for subgroup 1, except Tc = -55°C and limits as shown.																			100		MHz
9 Tc = 25°C	t_{TLH}	3004 Fig 4 " " Fig 5 " " " "	98 99 100 101 102 103 104 105	+2.0 V " " " " " " " "	B OUT B " OUT B " " "	OUT B " " " OUT B " "	IN IN IN	IN IN IN	IN IN IN IN	IN IN IN IN	-3.2 V " " " " " " " "	" " " " " " " "	IN IN IN IN	IN IN IN IN	IN IN IN IN "	IN IN IN IN	B OUT B " " " " OUT B	B " " OUT B " " OUT B	+2.0 V " " " " " " " "	$1\overline{Q}$ 1Q $2\overline{Q}$ 2Q 1Q $1\overline{Q}$ 2Q $2\overline{Q}$	1.0 " " " " " " "	3.1 " " " " " " "	ns " " " " " " "
10		Same tests and terminal conditions as for subgroup 9, except Tc = 125°C and limits as shown.																			1.1	3.6	ns
11		Same tests and terminal conditions as for subgroup 9, except Tc = -55°C and limits as shown.																			0.9	3.4	ns
9 Tc = 25°C	t_{THL}	3004 Fig 4 " " Fig 5 " " " "	106 107 108 109 110 111 112 113	+2.0 V " " " " " " " "	OUT B " " OUT B " "	B OUT B " " OUT B "	IN IN IN	IN IN IN	IN IN IN IN	IN IN IN IN	-3.2 V " " " " " " " "	" " " " " " " "	IN IN IN IN	IN IN IN IN	IN IN IN IN "	IN IN IN IN	B " " OUT B " " OUT B	B " " OUT B " " OUT B	+2.0 V " " " " " " " "	$1\overline{Q}$ 1Q $2\overline{Q}$ 2Q 1Q $1\overline{Q}$ 2Q $2\overline{Q}$	1.0 " " " " " " "	3.1 " " " " " " "	ns " " " " " " "
10		Same tests and terminal conditions as for subgroup 9, except Tc = 125°C and limits as shown.																			1.1	3.6	ns
11		Same tests and terminal conditions as for subgroup 9, except Tc = -55°C and limits as shown.																			0.9	3.4	ns

TABLE III. Group A inspection for device type 02 - Continued.
For terminal conditions see table IIIA

Subgroup	Symbol	MIL-STD-883 method	Case E / Case F / Case 2	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Measured terminal	Limits		Unit
				5	6	7	8	9	10	11	12	13	14	15	16	1	2	3	4				
				2	3	4	5	7	8	9	10	12	13	14	15	17	18	19	20				
			Test no.	V_{CC1}	1Q	$1\overline{Q}$	1CLR	1P/S	1CE	1D	V_{EE}	CC	2D	2CE	2P/S	2CLR	$2\overline{Q}$	2Q	V_{CC2}		Min	Max	
9	t_{TLH1}	3003	114	+2.0 V	B	OUT	IN	IN			-3.2 V						B	B	+2.0 V	$1\overline{Q}$	1.1	3.3	ns
Tc = 25°C		Fig 4	115	"	OUT	B	IN	IN			"						"	"	"	1Q	"	"	"
		"	116	"	B	"					"				IN	IN	OUT	"	"	$2\overline{Q}$	"	"	"
		"	117	"	"	"					"				IN	IN	B	OUT	"	2Q	"	"	"
10		Same tests and terminal conditions as for subgroup 9, except Tc = 125°C and limits as shown.																			1.0	3.9	ns
11		Same tests and terminal conditions as for subgroup 9, except Tc = -55°C and limits as shown.																			1.0	3.7	ns
9	t_{TLH2}	3003	118	+2.0 V	OUT	B			IN	IN	-3.2 V						B	B	+2.0 V	1Q	1.5	3.3	ns
Tc = 25°C		Fig 5	119	"	B	OUT			IN	IN	"						"	"	"	$1\overline{Q}$	"	"	"
		"	120	"	"	B					"		IN	IN			"	OUT	"	2Q	"	"	"
		"	121	"	"	"					"		IN	IN			OUT	B	"	$2\overline{Q}$	"	"	"
10		Same tests and terminal conditions as for subgroup 9, except Tc = 125°C and limits as shown.																			1.2	3.9	ns
11		Same tests and terminal conditions as for subgroup 9, except Tc = -55°C and limits as shown.																			1.3	3.7	ns
9	t_{THL1}	3003	122	+2.0 V	OUT	B	IN	IN			-3.2 V						B	B	+2.0 V	1Q	1.1	3.3	ns
Tc = 25°C		Fig 4	123	"	B	OUT	IN	IN			"						"	"	"	$1\overline{Q}$	"	"	"
		"	124	"	"	B					"				IN	IN	"	OUT	"	2Q	"	"	"
		"	125	"	"	"					"				IN	IN	OUT	B	"	$2\overline{Q}$	"	"	"
10		Same tests and terminal conditions as for subgroup 9, except Tc = 125°C and limits as shown.																			1.0	3.9	ns
11		Same tests and terminal conditions as for subgroup 9, except Tc = -55°C and limits as shown.																			1.0	3.7	ns
9	t_{PHL2}	3003	126	+2.0 V	OUT	B			IN	IN	-3.2 V						B	B	+2.0 V	1Q	1.5	3.3	ns
Tc = 25°C		Fig 5	127	"	B	OUT			IN	IN	"						"	"	"	$1\overline{Q}$	"	"	"
		"	128	"	"	B					"		IN	IN			"	OUT	"	2Q	"	"	"
		"	129	"	"	"					"		IN	IN			OUT	B	"	$2\overline{Q}$	"	"	"
10		Same tests and terminal conditions as for subgroup 9, except Tc = 125°C and limits as shown.																			1.2	3.9	ns
11		Same tests and terminal conditions as for subgroup 9, except Tc = -55°C and limits as shown.																			1.3	3.7	ns

TABLE III. Group A inspection for device type 03.
For terminal conditions see table IIIA

Subgroup	Symbol	MIL-STD-883 method	Case E	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Measured terminal	Limits		Unit
			Case F	5	6	7	8	9	10	11	12	13	14	15	16	1	2	3	4				
			Case 2	2	3	4	5	7	8	9	10	12	13	14	15	17	18	19	20				
			Test no.	V_{CC1}	1Q	2Q	3Q	1D	2D	3D	V_{EE}	CLK	4D	5D	6D	4Q	5Q	6Q	V_{CC2}		Min	Max	
1 Tc = 25°C	V_{OH}	3006	1	GND	A	A	A	V_{IH1}			-5.2 V	C				A	A	A	GND	1Q	-.93	-.78	V
			2	"	"	"	"		V_{IH1}		"	"				"	"	"	"	2Q	"	"	"
			3	"	"	"	"			V_{IH1}	"	"				"	"	"	"	3Q	"	"	"
			4	"	"	"	"				"	"	V_{IH1}			"	"	"	"	4Q	"	"	"
			5	"	"	"	"				"	"		V_{IH1}		"	"	"	"	5Q	"	"	"
			6	"	"	"	"				"	"			V_{IH1}	"	"	"	"	6Q	"	"	"
2		Same tests and terminal conditions as for subgroup 1, except Tc = 125°C and limits as shown.																			-.825	-.63	V
3		Same tests and terminal conditions as for subgroup 1, except Tc = -55°C and limits as shown.																			-1.08	-.88	V
1 Tc = 25°C	V_{OL}	3007	7	GND	A	A	A	V_{IL1}			-5.2 V	C				A	A	A	GND	1Q	-1.85	-1.62	V
			8	"	"	"	"		V_{IL1}		"	"				"	"	"	"	2Q	"	"	"
			9	"	"	"	"			V_{IL1}	"	"				"	"	"	"	3Q	"	"	"
			10	"	"	"	"				"	"	V_{IL1}			"	"	"	"	4Q	"	"	"
			11	"	"	"	"				"	"		V_{IL1}		"	"	"	"	5Q	"	"	"
			12	"	"	"	"				"	"			V_{IL1}	"	"	"	"	6Q	"	"	"
2		Same tests and terminal conditions as for subgroup 1, except Tc = 125°C and limits as shown.																			-1.82	-1.545	V
3		Same tests and terminal conditions as for subgroup 1, except Tc = -55°C and limits as shown.																			-1.92	-1.655	V
1 Tc = 25°C	Precond		13	GND	A	A	A	V_{IL1}			-5.2 V	C				A	A	A	GND		-.95		V
	V_{OTH}		14	"	"	"	"	V_{ITH}			"	C				"	"	"	"	1Q	"		"
	V_{OTH}		15	"	"	"	"	V_{IL1}			"	D				"	"	"	"	1Q	"		"
	Precond		16	"	"	"	"	V_{IL1}			"	C				"	"	"	"		"		"
	V_{OTH}		17	"	"	"	"	V_{IH1}			"	E				"	"	"	"	1Q	"		"
	Precond		18	"	"	"	"		V_{IL1}		"	C				"	"	"	"		"		"
	V_{OTH}		19	"	"	"	"		V_{ITH}		"	C				"	"	"	"	2Q	"		"
	V_{OTH}		20	"	"	"	"		V_{IL1}		"	D				"	"	"	"	2Q	"		"
	Precond		21	"	"	"	"		V_{IL1}		"	C				"	"	"	"		"		"
	V_{OTH}		22	"	"	"	"		V_{IH1}		"	E				"	"	"	"	2Q	"		"
	Precond		23	"	"	"	"			V_{IL1}	"	C				"	"	"	"		"		"
	V_{OTH}		24	"	"	"	"			V_{ITH}	"	C				"	"	"	"	3Q	"		"
	V_{OTH}		25	"	"	"	"			V_{IL1}	"	D				"	"	"	"	3Q	"		"
	Precond		26	"	"	"	"			V_{IL1}	"	C				"	"	"	"		"		"
	V_{OTH}		27	"	"	"	"			V_{IH1}	"	E				"	"	"	"	3Q	"		"
	Precond		28	"	"	"	"				"	C	V_{IL1}			"	"	"	"		"		"
	V_{OTH}		29	"	"	"	"				"	C	V_{ITH}			"	"	"	"	4Q	"		"
	V_{OTH}		30	"	"	"	"				"	D	V_{IL1}			"	"	"	"	4Q	"		"
	Precond		31	"	"	"	"				"	C	V_{IL1}			"	"	"	"		"		"
	V_{OTH}		32	"	"	"	"				"	E	V_{IH1}			"	"	"	"	4Q	"		"
	Precond		33	"	"	"	"				"	C		V_{IL1}		"	"	"	"		"		"
	V_{OTH}		34	"	"	"	"				"	C		V_{ITH}		"	"	"	"	5Q	"		"
	V_{OTH}		35	"	"	"	"				"	D		V_{IL1}		"	"	"	"	5Q	"		"
	Precond		36	"	"	"	"				"	C		V_{IL1}		"	"	"	"		"		"
	V_{OTH}		37	"	"	"	"				"	E		V_{IH1}		"	"	"	"	5Q	"		"
	Precond		38	"	"	"	"				"	C			V_{IL1}	"	"	"	"		"		"
	V_{OTH}		39	"	"	"	"				"	C			V_{ITH}	"	"	"	"	6Q	"		"
	V_{OTH}		40	"	"	"	"				"	D			V_{IL1}	"	"	"	"	6Q	"		"
	Precond		41	"	"	"	"				"	C			V_{IL1}	"	"	"	"		"		"
	V_{OTH}		42	"	"	"	"				"	E			V_{IH1}	"	"	"	"	6Q	"		"
2		Same tests and terminal conditions as for subgroup 1, except Tc = 125°C and limits as shown.																			-.845		
3		Same tests and terminal conditions as for subgroup 1, except Tc = -55°C and limits as shown.																			-1.1		

TABLE III. Group A inspection for device type 03 - Continued.
For terminal conditions see table IIIA

Subgroup	Symbol	MIL-STD-883 method	Case E	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Measured terminal	Limits		Unit
			Case F	5	6	7	8	9	10	11	12	13	14	15	16	1	2	3	4				
			Case 2	2	3	4	5	7	8	9	10	12	13	14	15	17	18	19	20				
			Test no.	V_{CC1}	1Q	2Q	3Q	1D	2D	3D	V_{EE}	CLK	4D	5D	6D	4Q	5Q	6Q	V_{CC2}		Min	Max	
1	Precond		43	GND	A	A	A	V_{IH1}			-5.2 V	C				A	A	A	GND			-1.6	V
Tc = 25°C	V_{OTL}		44	"	"	"	"	V_{ITL}			"	C				"	"	"	"	1Q		"	"
	V_{OTL}		45	"	"	"	"	V_{IH1}			"	D				"	"	"	"	1Q		"	"
	Precond		46	"	"	"	"	V_{IH1}			"	C				"	"	"	"			"	"
	V_{OTL}		47	"	"	"	"	V_{IL1}			"	E				"	"	"	"	1Q		"	"
	Precond		48						V_{IH1}			C				"	"	"	"			"	"
	V_{OTL}		49	"	"	"	"		V_{ITL}		"	C				"	"	"	"	2Q		"	"
	V_{OTL}		50	"	"	"	"		V_{IH1}		"	D				"	"	"	"	2Q		"	"
	Precond		51	"	"	"	"		V_{IH1}		"	C				"	"	"	"			"	"
	V_{OTL}		52	"	"	"	"		V_{IL1}		"	E				"	"	"	"	2Q		"	"
	Precond		53	"	"	"	"			V_{IH1}	"	C				"	"	"	"			"	"
	V_{OTL}		54	"	"	"	"			V_{ITL}	"	C				"	"	"	"	3Q		"	"
	V_{OTL}		55	"	"	"	"			V_{IH1}	"	D				"	"	"	"	3Q		"	"
	Precond		56	"	"	"	"			V_{IH1}	"	C				"	"	"	"			"	"
	V_{OTL}		57	"	"	"	"			V_{IL1}	"	E				"	"	"	"	3Q		"	"
	Precond		58	"	"	"	"				"	C	V_{IH1}			"	"	"	"			"	"
	V_{OTL}		59	"	"	"	"				"	C	V_{ITL}			"	"	"	"	4Q		"	"
	V_{OTL}		60	"	"	"	"				"	D	V_{IH1}			"	"	"	"	4Q		"	"
	Precond		61	"	"	"	"				"	C	V_{IH1}			"	"	"	"			"	"
	V_{OTL}		62	"	"	"	"				"	E	V_{IL1}			"	"	"	"	4Q		"	"
	Precond		63	"	"	"	"				"	C		V_{IH1}		"	"	"	"			"	"
	V_{OTL}		64	"	"	"	"				"	C		V_{ITL}		"	"	"	"	5Q		"	"
	V_{OTL}		65	"	"	"	"				"	D		V_{IH1}		"	"	"	"	5Q		"	"
	Precond		66	"	"	"	"				"	C		V_{IH1}		"	"	"	"			"	"
	V_{OTL}		67	"	"	"	"				"	E		V_{IL1}		"	"	"	"	5Q		"	"
	Precond		68	"	"	"	"				"	C			V_{IH1}	"	"	"	"			"	"
	V_{OTL}		69	"	"	"	"				"	C			V_{ITL}	"	"	"	"	6Q		"	"
	V_{OTL}		70	"	"	"	"				"	D			V_{IH1}	"	"	"	"	6Q		"	"
	Precond		71	"	"	"	"				"	C			V_{IH1}	"	"	"	"			"	"
	V_{OTL}		72	"	"	"	"				"	E			V_{IL1}	"	"	"	"	6Q		"	"
2		Same tests and terminal conditions as for subgroup 1, except Tc = 125°C and limits as shown.																				-1.525	V
3		Same tests and terminal conditions as for subgroup 1, except Tc = -55°C and limits as shown.																				-1.635	V
1	I_{EE}	3005	73	GND							-5.2 V								GND	V_{EE}	-110		mA
Tc = 25°C																							
2		Same tests and terminal conditions as for subgroup 1, except Tc = 125°C and limits as shown.																			-121		mA
3		Same tests and terminal conditions as for subgroup 1, except Tc = -55°C and limits as shown.																			-121		mA
1	I_{IH1}	3010	74	GND				V_{IH1}			-5.2 V								GND	1D		220	µA
Tc = 25°C			75	"					V_{IH1}		"								"	2D		"	"
			76	"						V_{IH1}	"								"	3D		"	"
			77	"							"		V_{IH1}						"	4D		"	"
			78	"							"			V_{IH1}					"	5D		"	"
			79	"							"				V_{IH1}				"	6D		"	"
2		Same tests and terminal conditions as for subgroup 1, except Tc = 125°C and limits as shown.																				375	µA
3		Same tests and terminal conditions as for subgroup 1, except Tc = -55°C and limits as shown.																				375	µA
1	I_{IH2}	3010	80	GND							-5.2 V	V_{IH1}							GND	CLK		310	µA
Tc = 25°C																							
2		Same tests and terminal conditions as for subgroup 1, except Tc = 125°C and limits as shown.																				527	µA
3		Same tests and terminal conditions as for subgroup 1, except Tc = -55°C and limits as shown.																				527	µA
1	I_{IL}	3009	81	GND				V_{IL1}			-5.2 V								GND	1D	0.5		µA
Tc = 25°C			82	"					V_{IL1}		"								"	2D	"		"
			83	"						V_{IL1}	"								"	3D	"		"
			84	"							"		V_{IL1}						"	4D	"		"
			85	"							"			V_{IL1}					"	5D	"		"
			86	"							"				V_{IL1}				"	6D	"		"
2		Same tests and terminal conditions as for subgroup 1, except Tc = 125°C and limits as shown.																			0.3		µA
3		Same tests and terminal conditions as for subgroup 1, except Tc = -55°C and limits as shown.																			0.5		µA

TABLE III. Group A inspection for device type 03 - Continued.
For terminal conditions see table IIIA

Subgroup	Symbol	MIL-STD-883 method	Case E	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Measured terminal	Limits		Unit
			Case F	5	6	7	8	9	10	11	12	13	14	15	16	1	2	3	4				
			Case 2	2	3	4	5	7	8	9	10	12	13	14	15	17	18	19	20				
			Test no.	V_{CC1}	1Q	2Q	3Q	1D	2D	3D	V_{EE}	CLK	4D	5D	6D	4Q	5Q	6Q	V_{CC2}		Min	Max	
9	F_{MAX}	Fig 9	87	+2.0 V	OUT	B	B	P1	V_{OL}	V_{OL}	-3.2 V	IN	V_{OL}	V_{OL}	V_{OL}	B	B	B	+2.0 V	1Q	62.5		MHz
Tc = 25°C		"	88	"	B	OUT	B	V_{OL}	P1	V_{OL}	"	"	"	"	"	"	"	"	"	2Q	"		"
		"	89	"	"	B	OUT	"	V_{OL}	P1	"	"	"	"	"	"	"	"	"	3Q	"		"
		"	90	"	"	"	B	"	"	V_{OL}	"	"	P1	"	"	OUT	"	"	"	4Q	"		"
		"	91	"	"	"	"	"	"	"	"	"	V_{OL}	P1	"	B	OUT	"	"	5Q	"		"
		"	92	"	"	"	"	"	"	"	"	"	V_{OL}	V_{OL}	P1	B	B	OUT	"	6Q	"		"
10		Same tests and terminal conditions as for subgroup 9, except Tc = 125°C and limits as shown.																			62.5		MHz
11		Same tests and terminal conditions as for subgroup 9, except Tc = -55°C and limits as shown.																			57.5		MHz
9	t_{TLH}	Fig 9	93	+2.0 V	OUT	B	B	IN			-3.2 V	IN				B	B	B	+2.0 V	1Q	1.1	4.0	ns
Tc = 25°C		"	94	"	B	OUT	B		IN		"	"				"	"	"	"	2Q	"	"	"
		"	95	"	"	B	OUT			IN	"	"				"	"	"	"	3Q	"	"	"
		"	96	"	"	"	B				"	"	IN			OUT	"	"	"	4Q	"	"	"
		"	97	"	"	"	"				"	"		IN		B	OUT	"	"	5Q	"	"	"
		"	98	"	"	"	"				"	"			IN	B	B	OUT	"	6Q	"	"	"
10		Same tests and terminal conditions as for subgroup 9, except Tc = 125°C and limits as shown.																			1.0	4.5	ns
11		Same tests and terminal conditions as for subgroup 9, except Tc = -55°C and limits as shown.																			1.0	4.3	ns
9	t_{THL}	Fig 9	99	+2.0 V	OUT	B	B	IN			-3.2 V	IN				B	B	B	+2.0 V	1Q	1.1	4.0	ns
Tc = 25°C		"	100	"	B	OUT	B		IN		"	"				"	"	"	"	2Q	"	"	
		"	101	"	"	B	OUT			IN	"	"				"	"	"	"	3Q	"	"	
		"	102	"	"	"	B				"	"	IN			OUT	"	"	"	4Q	"	"	
		"	103	"	"	"	"				"	"		IN		B	OUT	"	"	5Q	"	"	
		"	104	"	"	"	"				"	"			IN	B	B	OUT	"	6Q	"	"	"
10		Same tests and terminal conditions as for subgroup 9, except Tc = 125°C and limits as shown.																			1.0	4.5	ns
11		Same tests and terminal conditions as for subgroup 9, except Tc = -55°C and limits as shown.																			1.0	4.3	ns
9	t_{PLH1}	Fig 9	105	+2.0 V	OUT	B	B	IN			-3.2 V	IN				B	B	B	+2.0 V	1Q	1.5	4.5	ns
Tc = 25°C		"	106	"	B	OUT	B		IN		"	"				"	"	"	"	2Q	"	"	"
		"	107	"	"	B	OUT			IN	"	"				"	"	"	"	3Q	"	"	"
		"	108	"	"	"	B				"	"	IN			OUT	"	"	"	4Q	"	"	"
		"	109	"	"	"	"				"	"		IN		B	OUT	"	"	5Q	"	"	"
		"	110	"	"	"	"				"	"			IN	B	B	OUT	"	6Q	"	"	"
10		Same tests and terminal conditions as for subgroup 9, except Tc = 125°C and limits as shown.																			1.3	5.3	ns
11		Same tests and terminal conditions as for subgroup 9, except Tc = -55°C and limits as shown.																			1.2	4.9	ns
9	t_{PHL1}	Fig 9	111	+2.0 V	OUT	B	B	IN			-3.2 V	IN				B	B	B	+2.0 V	1Q	1.5	4.5	ns
Tc = 25°C		"	112	"	B	OUT	B		IN		"	"				"	"	"	"	2Q	"	"	"
		"	113	"	"	B	OUT			IN	"	"				"	"	"	"	3Q	"	"	"
		"	114	"	"	"	B				"	"	IN			OUT	"	"	"	4Q	"	"	"
		"	115	"	"	"	"				"	"		IN		B	OUT	"	"	5Q	"	"	"
		"	116	"	"	"	"				"	"			IN	B	B	OUT	"	6Q	"	"	"
10		Same tests and terminal conditions as for subgroup 9, except Tc = 125°C and limits as shown.																			1.3	5.3	ns
11		Same tests and terminal conditions as for subgroup 9, except Tc = -55°C and limits as shown.																			1.2	4.9	ns

TABLE III. Group A inspection for device type 04.
For terminal conditions see table IIIA

Subgroup	Symbol	MIL-STD-883 method	Case E / Case F / Case 2 / Test no.	1 / 5 / 2 / V_{CC1}	2 / 6 / 3 / 1Q	3 / 7 / 4 / $1\overline{Q}$	4 / 8 / 5 / 1CLR	5 / 9 / 7 / 1P/S	6 / 10 / 8 / 1K	7 / 11 / 9 / 1J	8 / 12 / 10 / V_{EE}	9 / 13 / 12 / C	10 / 14 / 13 / 2J	11 / 15 / 14 / 2K	12 / 16 / 15 / 2P/S	13 / 1 / 17 / 2CLR	14 / 2 / 18 / $2\overline{Q}$	15 / 3 / 19 / 2Q	16 / 4 / 20 / V_{CC2}	Measured terminal	Limits Min	Limits Max	Unit
1	V_{OH}	3006	1	GND	A	A	V_{IH1}				-5.2 V						A	A	GND	$1\overline{Q}$	-.93	-.78	V
Tc = 25°C		"	2	"	"	"		V_{IH1}			"						"	"	"	1Q	"	"	"
		"	3	"	"	"					"					V_{IH1}	"	"	"	$2\overline{Q}$	"	"	"
		"	4	"	"	"					"				V_{IH1}		"	"	"	2Q	"	"	"
2		Same tests and terminal conditions as for subgroup 1, except Tc = 125°C and limits as shown.																			-.825	-.63	V
3		Same tests and terminal conditions as for subgroup 1, except Tc = -55°C and limits as shown.																			-1.08	-.88	V
1	V_{OL}	3007	5	GND	A	A		V_{IH1}			-5.2 V						A	A	GND	$1\overline{Q}$	-1.85	-1.62	V
Tc = 25°C		"	6	"	"	"	V_{IH1}				"						"	"	"	1Q	"	"	"
		"	7	"	"	"					"				V_{IH1}		"	"	"	$2\overline{Q}$	"	"	"
		"	8	"	"	"					"					V_{IH1}	"	"	"	2Q	"	"	"
2		Same tests and terminal conditions as for subgroup 1, except Tc = 125°C and limits as shown.																			-1.82	-1.545	V
3		Same tests and terminal conditions as for subgroup 1, except Tc = -55°C and limits as shown.																			-1.92	-1.655	V
1	V_{OTH}		9	GND	A	A	V_{IL1}	V_{IH1}	V_{IL1}	V_{IL1}	-5.2 V	V_{IL1}	V_{IL1}	V_{IL1}	V_{IH1}	V_{IL1}	A	A	GND	1Q	-.95		V
Tc = 25°C			10	"	"	"	"	"	"	"	"	"	"	"	V_{IH1}	V_{IL1}	"	"	"	2Q	"		"
			11	"	"	"	V_{ITH}	V_{IL1}	"	"	"	"	"	"	V_{IL1}	V_{ITH}	"	"	"	$1\overline{Q}$	"		"
			12	"	"	"	V_{ITH}	"	"	"	"	"	"	"	"	V_{ITH}	"	"	"	$2\overline{Q}$	"		"
			13	"	"	"	V_{IL1}	"	"	"	"	"	"	"	"	V_{IL1}	"	"	"	$1\overline{Q}$	"		"
			14	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	$2\overline{Q}$	"		"
			15	"	"	"	"	V_{ITL}	"	"	"	"	"	"	V_{ITL}	"	"	"	"	$1\overline{Q}$	"		"
			16	"	"	"	"	V_{ITL}	"	"	"	"	"	"	V_{ITL}	"	"	"	"	$2\overline{Q}$	"		"
			17	"	"	"	"	V_{ITH}	"	"	"	"	"	"	V_{ITH}	"	"	"	"	1Q	"		"
			18	"	"	"	"	V_{ITH}	"	"	"	"	"	"	V_{ITH}	"	"	"	"	2Q	"		"
			19	"	"	"	"	V_{IL1}	"	"	"	"	"	"	V_{IL1}	"	"	"	"	1Q	"		"
			20	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	2Q	"		"
			21	"	"	"	V_{ITL}	"	"	"	"	"	"	"	"	V_{ITL}	"	"	"	1Q	"		"
			22	"	"	"	V_{ITL}	"	"	"	"	"	"	"	"	V_{ITL}	"	"	"	2Q	"		"
			23	"	"	"	V_{ITH}	"	"	"	"	"	"	"	"	V_{ITH}	"	"	"	$1\overline{Q}$	"		"
			24	"	"	"	V_{ITH}	"	"	"	"	"	"	"	"	V_{ITH}	"	"	"	$2\overline{Q}$	"		"
			25	"	"	"	V_{IL1}	"	V_{ITH}	"	"	"	"	V_{ITH}	"	V_{IL1}	"	"	"	$1\overline{Q}$	"		"
			26	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	$2\overline{Q}$	"		"
			27	"	"	"	"	"	"	"	"	V_{ITL}	"	"	"	"	"	"	"	$1\overline{Q}$	"		"
			28	"	"	"	"	"	"	"	"	V_{ITL}	"	"	"	"	"	"	"	$2\overline{Q}$	"		"
			29	"	"	"	"	"	"	"	"	V_{ITH}	"	"	"	"	"	"	"	1Q	"		"
			30	"	"	"	"	"	"	"	"	V_{ITH}	"	"	"	"	"	"	"	2Q	"		"
			31	"	"	"	"	"	"	"	"	V_{IL1}	"	"	"	"	"	"	"	1Q	"		"
			32	"	"	"	"	"	"	"	"	V_{IL1}	"	"	"	"	"	"	"	2Q	"		"
			33	"	"	"	"	"	V_{IL1}	"	"	"	"	V_{IL1}	"	"	"	"	1Q	"		"
			34	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	2Q	"		"
			35	"	"	"	"	"	"	V_{ITH}	"	"	V_{ITH}	"	"	"	"	"	1Q	"		"
			36	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	2Q	"		"
			37	"	"	"	"	"	"	"	"	V_{ITL}	"	"	"	"	"	"	1Q	"		"
			38	"	"	"	"	"	"	"	"	V_{ITL}	"	"	"	"	"	"	2Q	"		"
			39	"	"	"	"	"	"	"	"	V_{ITH}	"	"	"	"	"	"	1Q	"		"
			40	"	"	"	"	"	"	"	"	V_{ITH}	"	"	"	"	"	"	$2\overline{Q}$	"		"
			41	"	"	"	"	"	"	"	"	V_{IL1}	"	"	"	"	"	"	$1\overline{Q}$	"		"
			42	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	$2\overline{Q}$	"		"
			43	"	"	"	"	"	"	V_{ITL}	"	"	V_{ITL}	"	"	"	"	"	$1\overline{Q}$	"		"
			44	"	"	"	"	"	"	V_{ITL}	"	"	V_{ITL}	"	"	"	"	"	$2\overline{Q}$	"		"
2		Same tests and terminal conditions as for subgroup 1, except Tc = 125°C and limits as shown.																			-.845		V
3		Same tests and terminal conditions as for subgroup 1, except Tc = -55°C and limits as shown.																			-1.1		V

TABLE III. Group A inspection for device type 04 - Continued.
For terminal conditions see table IIIA

Subgroup	Symbol	MIL-STD-883 method	Case E	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Measured terminal	Limits		Unit
			Case F	5	6	7	8	9	10	11	12	13	14	15	16	1	2	3	4				
			Case 2	2	3	4	5	7	8	9	10	12	13	14	15	17	18	19	20				
			Test no.	V_{CC1}	1Q	$1\overline{Q}$	1CLR	1P/S	1K	1J	V_{EE}	C	2J	2K	2P/S	2CLR	$2\overline{Q}$	2Q	V_{CC2}		Min	Max	
1 Tc = 25°C	V_{OTH}		45	GND	A	A	V_{IL1}	V_{IL1}	V_{IL1}	V_{ITL}	-5.2 V	V_{IL1}	V_{ITL}	V_{IL1}	V_{IL1}	V_{IL1}	A	A	GND	1Q	-.95		V
			46	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	2Q	"		"
			47	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	1Q	"		"
			48	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	2Q	"		"
			49	"	"	"	"	"	"	V_{IL1}	"	"	V_{IL1}	"	"	"	"	"	"	1Q	"		"
			50	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	2Q	"		"
			51	"	"	"	"	"	V_{ITL}	"	"	"	"	V_{ITL}	"	"	"	"	"	1Q	"		"
			52	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	2Q	"		"
			53	"	"	"	"	"	"	"	"	V_{IH1}	"	"	"	"	"	"	"	$1\overline{Q}$	"		"
			54	"	"	"	"	"	"	"	"	V_{IH1}	"	"	"	"	"	"	"	$2\overline{Q}$	"		"
			55	"	"	"	"	"	"	"	"	V_{IL1}	"	"	"	"	"	"	"	$1\overline{Q}$	"		"
			56	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	$2\overline{Q}$	"		"
			57	"	"	"	"	"	V_{ITH}	"	"	"	"	V_{ITH}	"	"	"	"	"	$1\overline{Q}$	"		"
			58	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	$2\overline{Q}$	"		"
			59	"	"	"	"	"	"	"	"	V_{IH1}	"	"	"	"	"	"	"	1Q	"		"
			60	"	"	"	"	"	"	"	"	V_{IH1}	"	"	"	"	"	"	"	2Q	"		"
			61	"	"	"	"	"	"	"	"	V_{IL1}	"	"	"	"	"	"	"	1Q	"		"
			62	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	2Q	"		"
			63	"	"	"	"	"	"	V_{IH1}	"	"	V_{IH1}	"	"	"	"	"	"	1Q	"		"
			64	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	2Q	"		"
			65	"	"	"	"	"	"	"	"	V_{IH1}	"	"	"	"	"	"	"	1Q	"		"
			66	"	"	"	"	"	"	"	"	V_{IH1}	"	"	"	"	"	"	"	2Q	"		"
			67	"	"	"	"	"	"	"	"	V_{IL1}	"	"	"	"	"	"	"	1Q	"		"
			68	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	2Q	"		"
			69	"	"	"	"	"	V_{IL1}	"	"	"	"	V_{IL1}	"	"	"	"	"	1Q	"		"
			70	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	2Q	"		"
			71	"	"	"	"	"	"	"	"	V_{IH1}	"	"	"	"	"	"	"	$1\overline{Q}$	"		"
			72	"	"	"	"	"	"	"	"	V_{IH1}	"	"	"	"	"	"	"	$2\overline{Q}$	"		"
			73	"	"	"	"	"	"	"	"	V_{IL1}	"	"	"	"	"	"	"	$1\overline{Q}$	"		"
			74	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	$2\overline{Q}$	"		"
			75	"	"	"	"	"	V_{IH1}	"	"	"	"	V_{IH1}	"	"	"	"	"	$1\overline{Q}$	"		"
			76	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	$2\overline{Q}$	"		"
			77	"	"	"	"	"	"	V_{ITL}	"	"	V_{ITH}	"	"	"	"	"	"	$1\overline{Q}$	"		"
			78	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	$2\overline{Q}$	"		"
			79	"	"	"	"	"	"	"	"	V_{IH1}	"	"	"	"	"	"	"	$1\overline{Q}$	"		"
			80	"	"	"	"	"	"	"	"	V_{IH1}	"	"	"	"	"	"	"	$2\overline{Q}$	"		"
			81	"	"	"	"	"	"	"	"	V_{IL1}	"	"	"	"	"	"	"	$1\overline{Q}$	"		"
			82	"	"	"	"	V_{IH1}	"	"	"	"	"	"	V_{IH1}	"	"	"	"	$2\overline{Q}$	"		"
2		Same tests and terminal conditions as for subgroup 1, except Tc = 125°C and limits as shown.																			-.845		V
3		Same tests and terminal conditions as for subgroup 1, except Tc = -55°C and limits as shown.																			-1.1		V

TABLE III. Group A inspection for device type 04 - Continued.
For terminal conditions see table IIIA

Subgroup	Symbol	MIL-STD-883 method	Case E	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Measured terminal	Limits		Unit
			Case F	5	6	7	8	9	10	11	12	13	14	15	16	1	2	3	4				
			Case 2	2	3	4	5	7	8	9	10	12	13	14	15	17	18	19	20				
			Test no.	V_{CC1}	1Q	$1\overline{Q}$	1CLR	1P/S	1K	1J	V_{EE}	C	2J	2K	2P/S	2CLR	$2\overline{Q}$	2Q	V_{CC2}		Min	Max	
1	V_{OTL}		83	GND	A	A	V_{IL1}	V_{IH1}	V_{IL1}	V_{IL1}	-5.2 V	V_{IL1}	V_{IL1}	V_{IL1}	V_{IH1}	V_{IL1}	A	A	GND	$1\overline{Q}$		-1.6	V
Tc = 25°C			84	"	"	"	"	V_{IL1}	V_{IH1}	"	"	"	"	"	V_{IH1}	"	"	"	"	$2\overline{Q}$		"	"
			85	"	"	"	V_{ITH}	"	V_{IL1}	"	"	"	"	"	V_{IL1}	V_{ITH}	"	"	"	1Q		"	"
			86	"	"	"	V_{ITH}	"	"	"	"	"	"	"	"	V_{ITH}	"	"	"	2Q		"	"
			87	"	"	"	V_{IL1}	"	"	"	"	"	"	"	"	V_{IL1}	"	"	"	1Q		"	"
			88	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	2Q		"	"
			89	"	"	"	"	V_{ITL}	"	"	"	"	"	"	"	V_{ITL}	"	"	"	1Q		"	"
			90	"	"	"	"	V_{ITL}	"	"	"	"	"	"	"	V_{ITL}	"	"	"	2Q		"	"
			91	"	"	"	"	V_{ITH}	"	"	"	"	"	"	"	V_{ITH}	"	"	"	$1\overline{Q}$		"	"
			92	"	"	"	"	V_{ITH}	"	"	"	"	"	"	"	V_{ITH}	"	"	"	$2\overline{Q}$		"	"
			93	"	"	"	"	V_{IL1}	"	"	"	"	"	"	V_{IL1}	"	"	"	"	$1\overline{Q}$		"	"
			94	"	"	"	"	V_{IL1}	"	"	"	"	"	"	V_{IL1}	"	"	"	"	$2\overline{Q}$		"	"
			95	"	"	"	V_{ITL}	"	V_{IL1}	"	"	"	"	V_{IL1}	"	V_{ITL}	"	"	"	$1\overline{Q}$		"	"
			96	"	"	"	V_{ITL}	"	"	"	"	"	"	"	"	V_{ITL}	"	"	"	$2\overline{Q}$		"	"
			97	"	"	"	V_{ITH}	"	"	"	"	"	"	"	"	V_{ITH}	"	"	"	1Q		"	"
			98	"	"	"	V_{ITH}	"	"	"	"	"	"	"	"	V_{ITH}	"	"	"	2Q		"	"
			99	"	"	"	V_{IL1}	"	V_{ITH}	"	"	"	"	V_{ITH}	"	V_{IL1}	"	"	"	1Q		"	"
			100	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	2Q		"	"
			101	"	"	"	"	"	"	"	"	V_{ITL}	"	"	"	"	"	"	"	1Q		"	"
			102	"	"	"	"	"	"	"	"	V_{ITL}	"	"	"	"	"	"	"	2Q		"	"
			103	"	"	"	"	"	"	"	"	V_{ITH}	"	"	"	"	"	"	"	$1\overline{Q}$		"	"
			104	"	"	"	"	"	"	"	"	V_{ITH}	"	"	"	"	"	"	"	$2\overline{Q}$		"	"
			105	"	"	"	"	"	"	"	"	V_{IL1}	"	"	"	"	"	"	"	$1\overline{Q}$		"	"
			106	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	$2\overline{Q}$		"	"
			107	"	"	"	"	"	V_{IL1}	"	"	"	"	V_{IL1}	"	"	"	"	"	$1\overline{Q}$		"	"
			108	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	$2\overline{Q}$		"	"
			109	"	"	"	"	"	"	V_{ITH}	"	"	V_{ITH}	"	"	"	"	"	"	$1\overline{Q}$		"	"
			110	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	$2\overline{Q}$		"	"
			111	"	"	"	"	"	"	"	"	V_{ITL}	"	"	"	"	"	"	"	$1\overline{Q}$		"	"
			112	"	"	"	"	"	"	"	"	V_{ITL}	"	"	"	"	"	"	"	$2\overline{Q}$		"	"
			113	"	"	"	"	"	"	"	"	V_{ITH}	"	"	"	"	"	"	"	1Q		"	"
			114	"	"	"	"	"	"	"	"	V_{ITH}	"	"	"	"	"	"	"	2Q		"	"
			115	"	"	"	"	"	"	"	"	V_{IL1}	"	"	"	"	"	"	"	1Q		"	"
			116	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	2Q		"	"
			117	"	"	"	"	"	"	V_{ITL}	"	"	V_{ITL}	"	"	"	"	"	"	1Q		"	"
			118	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	2Q		"	"
			119	"	"	"	"	"	"	"	"	V_{IH1}	"	"	"	"	"	"	"	$1\overline{Q}$		"	"
			120	"	"	"	"	"	"	"	"	V_{IH1}	"	"	"	"	"	"	"	$2\overline{Q}$		"	"
			121	"	"	"	"	"	"	"	"	V_{IL1}	"	"	"	"	"	"	"	$1\overline{Q}$		"	"
			122	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	$2\overline{Q}$		"	"
2		Same tests and terminal conditions as for subgroup 1, except Tc = 125°C and limits as shown.																				-1.525	V
3		Same tests and terminal conditions as for subgroup 1, except Tc = -55°C and limits as shown.																				-1.635	V

TABLE III. Group A inspection for device type 04 - Continued.
For terminal conditions see table IIIA

Subgroup	Symbol	MIL-STD-883 method	Case E	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Measured terminal	Limits		Unit
			Case F	5	6	7	8	9	10	11	12	13	14	15	16	1	2	3	4				
			Case 2	2	3	4	5	7	8	9	10	12	13	14	15	17	18	19	20				
			Test no.	V_{CC1}	1Q	$1\overline{Q}$	1CLR	1P/S	1K	1J	V_{EE}	C	2J	2K	2P/S	2CLR	$2\overline{Q}$	2Q	V_{CC2}		Min	Max	
1 Tc = 25°C	V_{OTL}		123	GND	A	A	V_{IL1}	V_{IL1}	V_{IL1}	V_{IL1}	-5.2 V	V_{IL1}	V_{IL1}	V_{IL1}	V_{IL1}	V_{IL1}	A	A	GND	$1\overline{Q}$		-1.6	V
			124	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	$2\overline{Q}$		"	"
			125	"	"	"	"	"	V_{ITL}	"	"	"	"	V_{ITL}	"	"	"	"	"	$1\overline{Q}$		"	"
			126	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	$2\overline{Q}$		"	"
			127	"	"	"	"	"	"	"	"	V_{IH1}	"	"	"	"	"	"	"	$1\overline{Q}$		"	"
			128	"	"	"	"	"	"	"	"	V_{IH1}	V_{IL1}	"	"	"	"	"	"	$2\overline{Q}$		"	"
			129	"	"	"	"	"	"	"	"	V_{IL1}	"	"	"	"	"	"	"	1Q		"	"
			130	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	2Q		"	"
			131	"	"	"	"	"	V_{ITH}	"	"	"	"	V_{ITH}	"	"	"	"	"	1Q		"	"
			132	"	"	"	"	"	V_{ITH}	"	"	"	"	V_{ITH}	"	"	"	"	"	2Q		"	"
			133	"	"	"	"	"	"	"	"	V_{IH1}	"	"	"	"	"	"	"	$1\overline{Q}$		"	"
			134	"	"	"	"	"	"	"	"	V_{IH1}	"	"	"	"	"	"	"	$2\overline{Q}$		"	"
			135	"	"	"	"	"	"	"	"	V_{IL1}	"	"	"	"	"	"	"	$1\overline{Q}$		"	"
			136	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	$2\overline{Q}$		"	"
			137	"	"	"	"	"	"	V_{IH1}	"	"	V_{IH1}	"	"	"	"	"	"	$1\overline{Q}$		"	"
			138	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	$2\overline{Q}$		"	"
			139	"	"	"	"	"	"	"	"	V_{IH1}	"	"	"	"	"	"	"	$1\overline{Q}$		"	"
			140	"	"	"	"	"	"	"	"	V_{IH1}	"	"	"	"	"	"	"	$2\overline{Q}$		"	"
			141	"	"	"	"	"	"	"	"	V_{IL1}	"	"	"	"	"	"	"	$1\overline{Q}$		"	"
			142	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	$2\overline{Q}$		"	"
			143	"	"	"	"	"	"	V_{IH1}	"	"	V_{IH1}	V_{IL1}	"	"	"	"	$1\overline{Q}$		"	"
			144	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	$2\overline{Q}$		"	"
			145	"	"	"	"	"	"	"	"	V_{IH1}	"	"	"	"	"	"	"	1Q		"	"
			146	"	"	"	"	"	"	"	"	V_{IH1}	"	"	"	"	"	"	"	2Q		"	"
			147	"	"	"	"	"	"	"	"	V_{IL1}	"	"	"	"	"	"	"	1Q		"	"
			148	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	2Q		"	"
			149	"	"	"	"	"	V_{IH1}	"	"	"	"	V_{IH1}	"	"	"	"	"	1Q		"	"
			150	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	2Q		"	"
			151	"	"	"	"	"	"	V_{ITH}	"	"	V_{ITH}	"	"	"	"	"	1Q		"	"
			152	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	"	2Q		"	"
			153	"	"	"	"	"	"	"	"	V_{IH1}	"	"	"	"	"	"	"	1Q		"	"
			154	"	"	"	"	"	"	"	"	V_{IH1}	"	"	"	"	"	"	"	2Q		"	"
			155	"	"	"	"	"	"	"	"	V_{IL1}	"	"	"	"	"	"	"	1Q		"	"
			156	"	"	"	"	"	"	"	"	V_{IL1}	"	"	"	"	"	"	"	2Q		"	"
2		Same tests and terminal conditions as for subgroup 1, except Tc = 125°C and limits as shown.																				-1.525	V
3		Same tests and terminal conditions as for subgroup 1, except Tc = -55°C and limits as shown.																				-1.635	V
1 Tc = 25°C	I_{EE}	3005	157	GND							-5.2 V								GND	V_{EE}	-68		µA
2		Same tests and terminal conditions as for subgroup 1, except Tc = 125°C and limits as shown.																			-75		µA
3		Same tests and terminal conditions as for subgroup 1, except Tc = -55°C and limits as shown.																			-75		µA
1 Tc = 25°C	I_{IH1}	3010	158	GND					V_{IH1}		-5.2 V								GND	1K		265	µA
		"	159	"						V_{IH1}	"								"	1J		"	"
		"	160	"							"	V_{IH1}							"	C		"	"
		"	161	"							"		V_{IH1}						"	2J			
		"	162	"							"			V_{IH1}					"	2K		"	"
2		Same tests and terminal conditions as for subgroup 1, except Tc = 125°C and limits as shown.																				450	µA
3		Same tests and terminal conditions as for subgroup 1, except Tc = -55°C and limits as shown.																				450	µA

TABLE III. Group A inspection for device type 04 - Continued.
For terminal conditions see table IIIA

Subgroup	Symbol	MIL-STD-883 method	Case E	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Measured terminal	Limits		Unit
			Case F	5	6	7	8	9	10	11	12	13	14	15	16	1	2	3	4				
			Case 2	2	3	4	5	7	8	9	10	12	13	14	15	17	18	19	20				
			Test no.	V_{CC1}	1Q	$1\overline{Q}$	1CLR	1P/S	1K	1J	V_{EE}	C	2J	2K	2P/S	2CLR	$2\overline{Q}$	2Q	V_{CC2}		Min	Max	
9 Tc = 25°C	I_{IH2}	3010 " " "	163 164 165 166	GND " " "			V_{IH1}	V_{IH1}			-5.2 V " " "				V_{IH1}	V_{IH1}			GND " " "	1CLR 1P/S 2P/S 2CLR		390 " " "	µA " " "
10		Same tests and terminal conditions as for subgroup 9, except Tc = 125°C and limits as shown.																				665	µA
11		Same tests and terminal conditions as for subgroup 9, except Tc = -55°C and limits as shown.																				665	µA
9 Tc = 25°C	I_{IL}	3009 " " " " " " " " "	167 168 169 170 171 172 173 174 175	GND " " " " " " " " "			V_{IL1}	V_{IL1}	V_{IL1}	V_{IL1}	-5.2 V " " " " " " " " "	V_{IL1}	V_{IL1}	V_{IL1}	V_{IL1}	V_{IL1}			GND " " " " " " " " "	1K 1J C 2J 2K 1CLR 1P/S 2P/S 2CLR	3.5 " " " " " " " " "		µA " " " " " " " " "
10		Same tests and terminal conditions as for subgroup 9, except Tc = 125°C and limits as shown.																			0.3		µA
11		Same tests and terminal conditions as for subgroup 9, except Tc = -55°C and limits as shown.																			0.5		µA
9 Tc = 25°C	F_{MAX}	Fig 10 Fig 10	176 177	2.0 V "	OUT B	B "			V_{IL2} "	V_{IL2} "	-3.2 V "	IN "	V_{IL2} "	V_{IL2} "			B "	B OUT	2.0 V "	1Q 2Q	62.5 "		MHz "
10		Same tests and terminal conditions as for subgroup 9, except Tc = 125°C and limits as shown.																			57.5		MHz
11		Same tests and terminal conditions as for subgroup 9, except Tc = -55°C and limits as shown.																			52.5		MHz
9 Tc = 25°C	t_{TLH}	Fig 11 " " "	178 179 180 181	2.0 V " " "	OUT B " "	B OUT B "	IN	IN	V_{IH2} " " "	V_{IH2} " " "	-3.2 V " " "		V_{IH2} " " "	V_{IH2} " " "	IN	IN	B " " OUT	B " OUT B	2.0 V " " "	1Q $1\overline{Q}$ 2Q $2\overline{Q}$	1.1 " " "	4.5 " " "	ns " " "
10		Same tests and terminal conditions as for subgroup 9, except Tc = 125°C and limits as shown.																			1.0	5.3	ns
11		Same tests and terminal conditions as for subgroup 9, except Tc = -55°C and limits as shown.																			1.0	4.8	ns
9 Tc = 25°C	t_{TLH}	Fig 12 " " "	182 183 184 185	2.0 V " " "	OUT B " "	B OUT B "	V_{IL2} " " "	V_{IL2} " " "	V_{IL2} " " "	V_{IL2} " " "	-3.2 V " " "	IN " " "	V_{IL2} " " "	V_{IL2} " " "	V_{IL2} " " "	V_{IL2} " " "	B " " OUT	B " OUT B	2.0 V " " "	1Q $1\overline{Q}$ 2Q $2\overline{Q}$	1.1 " " "	4.5 " " "	ns " " "
10		Same tests and terminal conditions as for subgroup 9, except Tc = 125°C and limits as shown.																			1.0	5.3	ns
11		Same tests and terminal conditions as for subgroup 9, except Tc = -55°C and limits as shown.																			1.0	4.8	ns
9 Tc = 25°C	t_{THL}	" " "	186 187 188 189	2.0 V " " "	OUT B " "	B OUT B "	IN	IN	V_{IH2} " " "	V_{IH2} " " "	-3.2 V " " "		V_{IH2} " " "	V_{IH2} " " "	IN	IN	B " " OUT	B " OUT B	2.0 V " " "	1Q $1\overline{Q}$ 2Q $2\overline{Q}$	1.1 " " "	4.5 " " "	ns " " "
10		Same tests and terminal conditions as for subgroup 9, except Tc = 125°C and limits as shown.																			1.0	5.3	ns
11		Same tests and terminal conditions as for subgroup 9, except Tc = -55°C and limits as shown.																			1.0	4.8	ns
9 Tc = 25°C	t_{THL}	" " "	190 191 192 193	2.0 V " " "	OUT B " "	B OUT B "	V_{IL2} " " "	V_{IL2} " " "	V_{IL2} " " "	V_{IL2} " " "	-3.2 V " " "	IN " " "	V_{IL2} " " "	V_{IL2} " " "	V_{IL2} " " "	V_{IL2} " " "	B " " OUT	B " OUT B	2.0 V " " "	1Q $1\overline{Q}$ 2Q $2\overline{Q}$	1.1 " " "	4.5 " " "	ns " " "
10		Same tests and terminal conditions as for subgroup 9, except Tc = 125°C and limits as shown.																			1.0	5.3	ns
11		Same tests and terminal conditions as for subgroup 9, except Tc = -55°C and limits as shown.																			1.0	4.8	ns

TABLE III. Group A inspection for device type 04 - Continued.
For terminal conditions see table IIIA

Subgroup	Symbol	MIL-STD-883 method	Case E	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Measured terminal	Limits		Unit
			Case F	5	6	7	8	9	10	11	12	13	14	15	16	1	2	3	4				
			Case 2	2	3	4	5	7	8	9	10	12	13	14	15	17	18	19	20				
			Test no.	V_{CC1}	1Q	$1\overline{Q}$	1CLR	1P/S	1K	1J	V_{EE}	C	2J	2K	2P/S	2CLR	$2\overline{Q}$	2Q	V_{CC2}		Min	Max	
9 Tc = 25°C	t_{PLH1}	Fig 11 " " "	194 195 196 197	2.0 V " " "	OUT B " "	B OUT B "	IN	IN	V_{IH2} " " "	V_{IH2} " " "	-3.2 V " " "		V_{IH2} " " "	V_{IH2} " " "	IN	IN	B " " OUT	B " OUT B	2.0 V " " "	1Q $1\overline{Q}$ 2Q $2\overline{Q}$	1.01 " " "	5.0 " " "	ns " " "
10		Same tests and terminal conditions as for subgroup 9, except Tc = 125°C and limits as shown.																			1.0	5.9	ns
11		Same tests and terminal conditions as for subgroup 9, except Tc = -55°C and limits as shown.																			1.0	5.4	ns
9 Tc = 25°C	t_{PHL1}	Fig 11 " " "	198 199 200 201	2.0 V " " "	OUT B " "	B OUT B "	IN	IN	V_{IH2} " " "	V_{IH2} " " "	-3.2 V " " "		V_{IH2} " " "	V_{IH2} " " "	IN	IN	B " " OUT	B " OUT B	2.0 V " " "	1Q $1\overline{Q}$ 2Q $2\overline{Q}$	1.01 " " "	5.0 " " "	ns " " "
10		Same tests and terminal conditions as for subgroup 9, except Tc = 125°C and limits as shown.																			1.0	5.9	ns
11		Same tests and terminal conditions as for subgroup 9, except Tc = -55°C and limits as shown.																			1.0	5.4	ns
9	t_{PLH2}	Fig 12 " " "	202 203 204 205	2.0 V	OUT B " "	B OUT B "	V_{IL2} " " "	V_{IL2} " " "	V_{IL2} " " "	V_{IL2} " " "	-3.2 V " " "	IN " " "	V_{IL2} " " "	V_{IL2} " " "	V_{IL2} " " "	V_{IL2} " " "	B " " OUT	B " OUT B	2.0 V " " "	1Q $1\overline{Q}$ 2Q $2\overline{Q}$	1.0 " " "	4.5 " " "	ns " " "
10		Same tests and terminal conditions as for subgroup 9, except Tc = -125°C and limits as shown.																			1.0	5.3	ns
11		Same tests and terminal conditions as for subgroup 9, except Tc = -55°C and limits as shown.																			1.0	4.8	ns
9 Tc = 25°C	t_{PHL2}	Fig 12 " " "	206 207 208 209	2.0 V " " "	OUT B " "	B OUT B "	V_{IL2} " " "	V_{IL2} " " "	V_{IL2} " " "	V_{IL2} " " "	-3.2 V " " "	IN " " "	V_{IL2} " " "	V_{IL2} " " "	V_{IL2} " " "	V_{IL2} " " "	B " " OUT	B " OUT B	2.0 V " " "	1Q $1\overline{Q}$ 2Q $2\overline{Q}$	1.0 " " "	4.5 " " "	ns " " "
10		Same tests and terminal conditions as for subgroup 9, except Tc = 125°C and limits as shown.																			1.0	5.3	ns
11		Same tests and terminal conditions as for subgroup 9, except Tc = -55°C and limits as shown.																			1.0	4.8	ns

5. PACKAGING

5.1 Packaging requirements. For acquisition purposes, the packaging requirements shall be as specified in the contract or order (see 6.2). When actual packaging of materiel is to be performed by DoD or in-house contractor personnel, these personnel need to contact the responsible packaging activity to ascertain packaging requirements. Packaging requirements are maintained by the Inventory Control Point's packaging activity within the Military Service or Defense Agency, or within the military service's system command. Packaging data retrieval is available from the managing Military Department's or Defense Agency's automated packaging files, CD-ROM products, or by contacting the responsible packaging activity.

6. NOTES

6.1 Intended use. Microcircuits conforming to this specification are intended for original equipment design applications and logistic support of existing equipment.

6.2 Acquisition requirements. Acquisition documents should specify the following:

a. Title, number, and date of the specification.

b. PIN and compliance identifier, if applicable (see 1.2).

c. Requirements for delivery of one copy of the conformance inspection data pertinent to the device inspection lot to be supplied with each shipment by the device manufacturer, if applicable.

d. Requirements for certificate of compliance, if applicable.

e. Requirements for notification of change of product or process to contracting activity in addition to notification to the qualifying activity, if applicable.

f. Requirements for failure analysis (including required test condition of method 5003 of MIL-STD-883), corrective action, and reporting of results, if applicable.

g. Requirements for product assurance options.

h. Requirements for special carriers, lead lengths, or lead forming, if applicable. These requirements should not affect the part number. Unless otherwise specified, these requirements will not apply to direct purchase by or direct shipment to the Government.

i. Requirements for "JAN" marking.

J. Packaging requirements (see 5.1).

6.3 Superseding information. The requirements of MIL-M-38510 have been superseded to take advantage of the available Qualified Manufacturer Listing (QML) system provided by MIL-PRF-38535. Previous references to MIL-M-38510 in this document have been replaced by appropriate references to MIL-PRF-38535. All technical requirements now consist of this specification and MIL-PRF-38535. The MIL-M-38510 specification sheet number and PIN have been retained to avoid adversely impacting existing government logistics systems and contractor's parts lists.

6.4 Qualification. With respect to products requiring qualification, awards will be made only for products which are, at the time of award of contract, qualified for inclusion in Qualified Manufacturers List QML-38535 whether or not such products have actually been so listed by that date. The attention of the contractors is called to these requirements, and manufacturers are urged to arrange to have the products that they propose to offer to the Federal Government tested for qualification in order that they may be eligible to be awarded contracts or purchase orders for the products covered by this specification. Information pertaining to qualification of products may be obtained from DSCC-VQ, 3990 E. Broad Street, Columbus, Ohio 43123-1199.

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6.5 Abbreviations, symbols, and definitions. The abbreviations, symbols, and definitions used herein are defined in MIL-PRF-38535, MIL-HDBK-1331, and as follows:

GND ..... Ground zero voltage potential
V_{OTH} ..... High-level threshold output voltage
V_{OTL} ..... Low-level threshold output voltage
V_{ITH} ..... High-level threshold input voltage
V_{ITL} ..... Low-level threshold input voltage
V_{EEL} ..... Shifted power supply voltage for the purpose of ac testing
T_J ..... Circuit junction temperature
T_C ..... Case operating temperature
P_D ..... Circuit power dissipation
θ_{JC} ..... Junction to case thermal resistance

6.6 Logistic support. Lead materials and finishes (see 3.3) are interchangeable. Unless otherwise specified, microcircuits acquired for Government logistic support will be acquired to device class B (see 1.2.2), lead material and finish A (see 3.3). Longer length leads and lead forming should not affect the part number.

6.7 Substitutability. The cross-reference information below is presented for the convenience of users. Microcircuits covered by this specification will functionally replace the listed generic-industry type. Generic-industry microcircuit types may not have equivalent operational performance characteristics across military temperature ranges or reliability factors equivalent to MIL-M-35810 device types and may have slight physical variations in relation to case size. The presence of this information should not be deemed as permitting substitution of generic-industry types for MIL-M-38510 types or as a waiver of any of the provisions of MIL-PRF-38535.

Military device type	Generic-industry type
01	10531
02	10631
03	10576
04	10535

6.8 Test limit compensation examples.

a. A device which has a power dissipation of 100 mW in case F is to be tested under a zero airflow condition. on figure 15, ΔT_J between 500 linear ft/min and zero airflow is +4°C. In order to adjust the various parameter limits, use figure 16 which defines the limit adjustment coefficients for ΔT_J. To adjust V_{OH}(max) at -55°C, use the $+\Delta T_J$ column of the -55°C portion of figure 16 and locate the coefficient corresponding to V_{OH}(max). This value is 1.25 mV/°C. Multiply the ΔT_J by the coefficient and algebraically add it to the -55°C V_{OH}(max) limit from table III.

V_{OH}(max) (adjusted limit) = (+4°C) x (1.25 mV/°C) + (-880 mV)
= 5 mV -880mV = -875 mV
Use –875 mV

Follow the same procedure to adjust the remaining parameters at -55°C as well as all parameters at 25°C and 125°C.

b. A device with a power dissipation of 150 mW in case E is to be tested at an airflow of 200 linear ft/min and the 25°C testing is to be accomplished at an ambient temperature of +20°C. On figure 14 ΔT_J due to airflow is +3°C. The ΔT_J due to ambient temperature change is -5°C (25-20). Therefore the total ΔT_J = -5 +3 = -2°C. Using figure 16 find the 25°C, $-\Delta T_J$ column. To adjust the V_{OL} (max) for a negative ΔT_J, this value is 0.44 mV/°C. Multiply the ΔT_J by the coefficient and algebraically add it to the +25°C V_{OL} (max) limit from table III.

V_{OL} (max) (adjusted limit) = (-2°C) x (0.44 mV/°C) + (-1620 mV)
= -.88 mV – 1620 mV = -1620.88 mV
Use – 1621 mV

Follow the same procedure to adjust the remaining parameters at +25°C.

6.9 Changes from previous issue. Marginal notations are not used in this revision to identify changes with respect to the previous issue due to the extensiveness of the changes.

Custodians:
Army - CR
Navy - EC
Air Force - 11
DLA - CC

Preparing activity:
DLA - CC

(Project 5962-2007)

Review activities:
Army - MI, SM
Navy - AS, CG, MC, SH, TD
Air Force - 03, 19, 99

NOTE: The activities listed above were interested in this document as of the date of this document. Since organizations and responsibilities can change, you should verify the currency of the information above using the ASSIST Online database at www.dodssp.daps.mil.